VOLUME VI AUGUST, 1913 NO. 8

Southern Medical Journal

Journal of The Southern Medical Association

THE TRUTH AND THE TRUTH ONLY ON EVERY PAGE FROM COVER TO COVER

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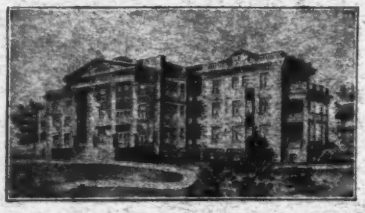

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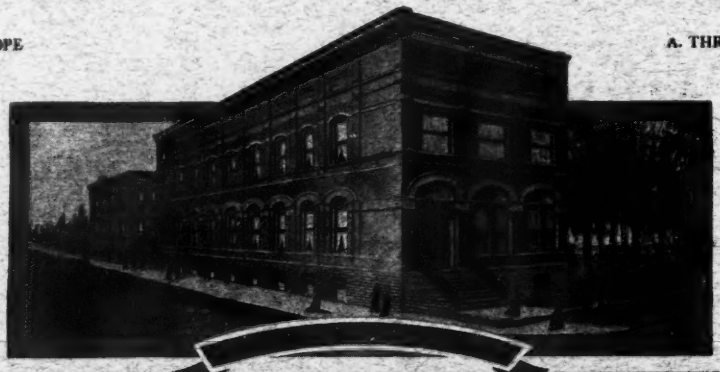

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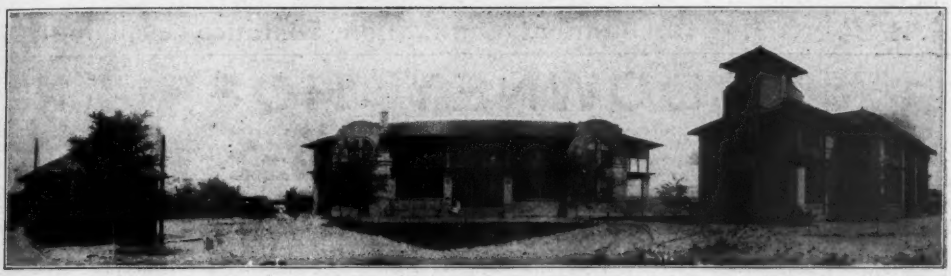

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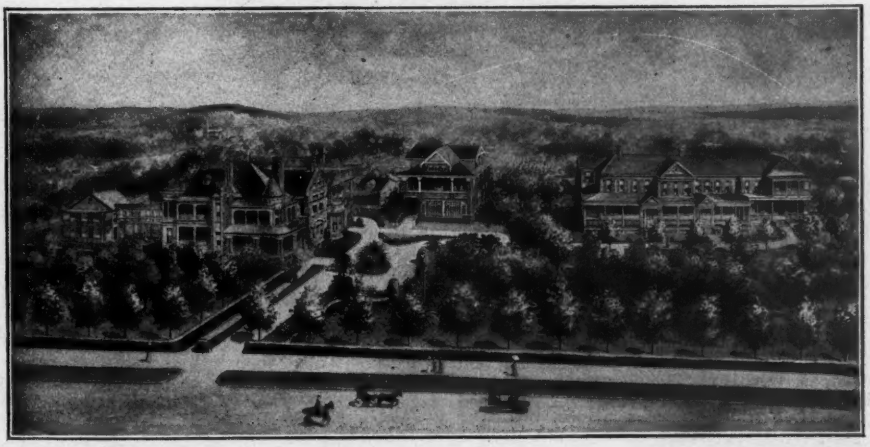

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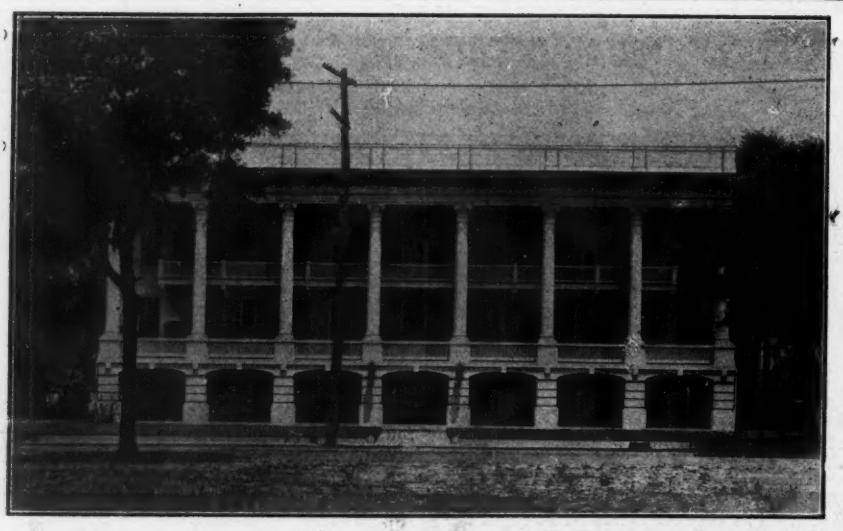

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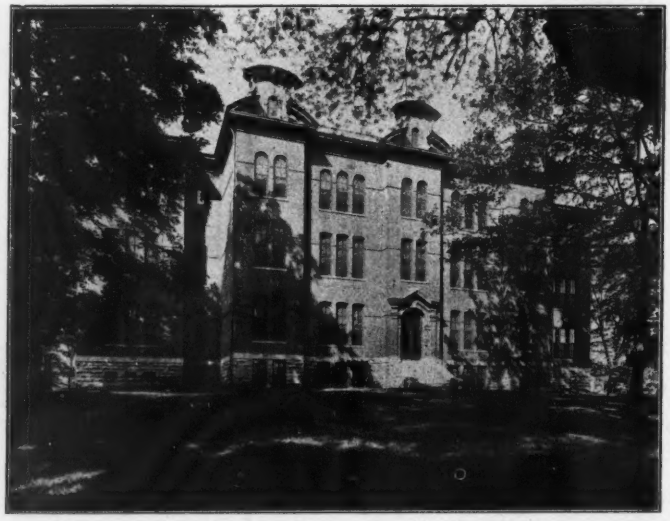

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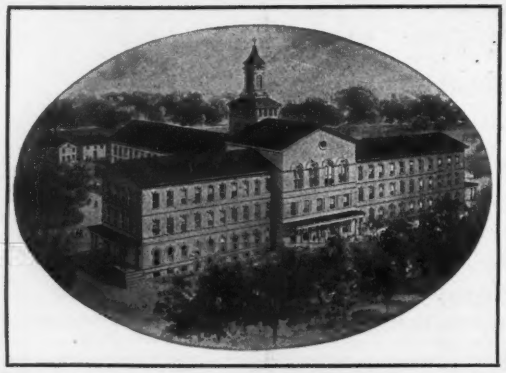

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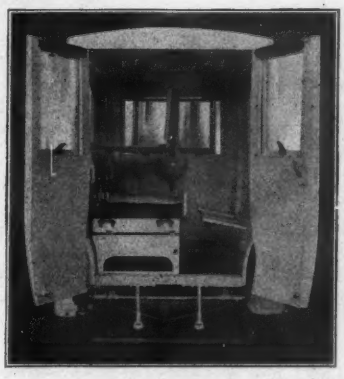

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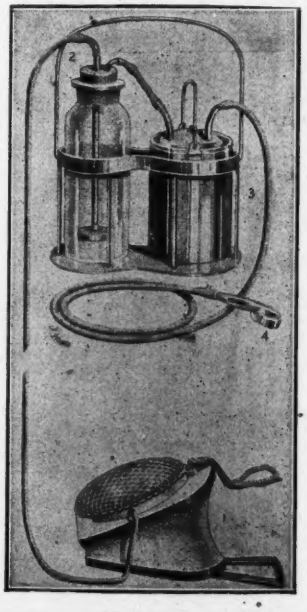

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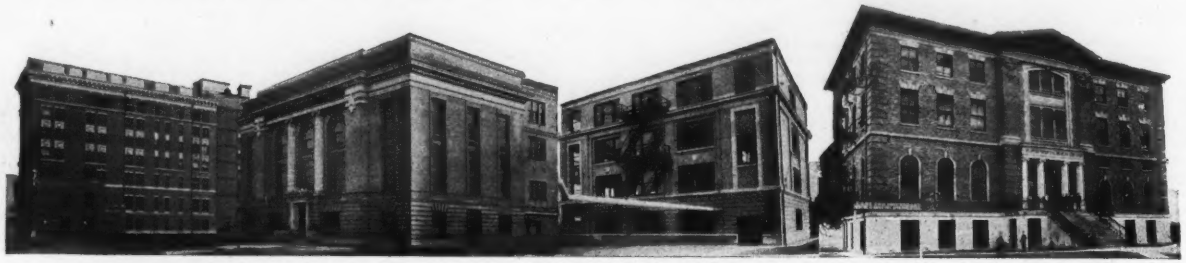

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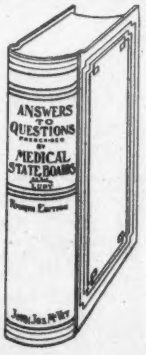

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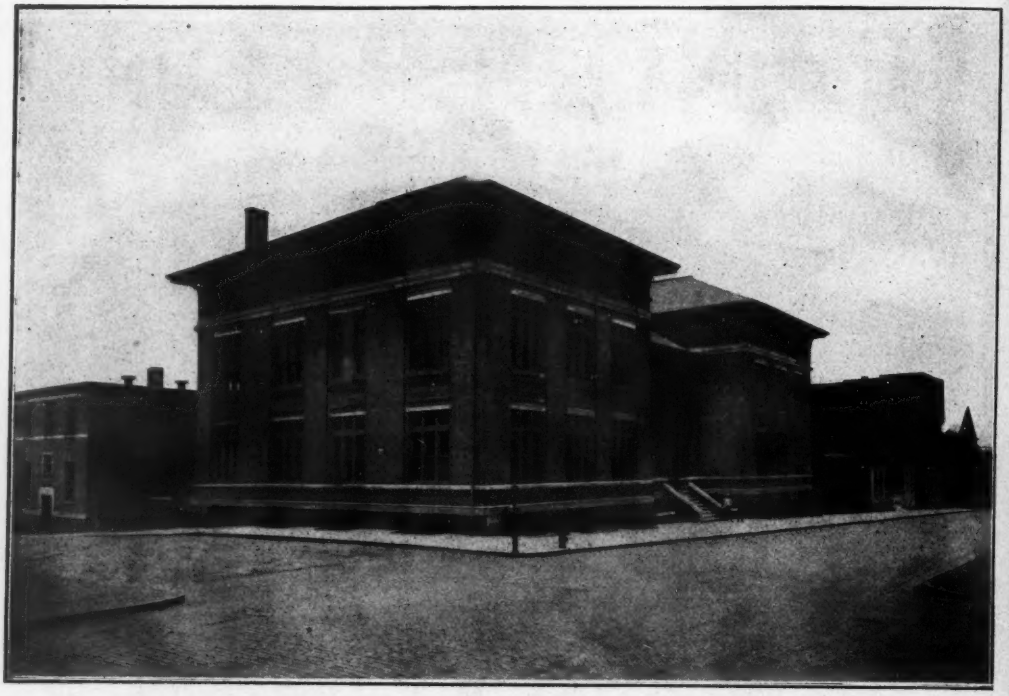

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SOUTHERN MEDICAL JOURNAL

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ORIGINAL ARTICLES

IMPROVED TECHNIC AND EQUIPMENT FOR THE WASSERMANN TEST, WITH COMMENTS.*

William Krauss, M.D.,

Professor Tropical Medicine, University of Tennessee, College of Medicine, Memphis, Tenn.

A diagnostic procedure is valuable only if carried out with such equipment, reagents, care and detail of technic as will eliminate every possible source of error. In serologic work, especially, we are dealing with a host of unknown factors, such as titration variants, errors of precision, age, sterility and peculiarities of sera and reagents, etc. Ever since the Wassermann test has been in general use in diagnosis, attempts have been made to simplify the test and to remove elements of uncertainty. To some extent simplicity and certainty are contradictory terms, especially in serologic work. Noguchi attempted to reduce the test to a technic that could be followed by unskilled workers. One of the results has been the invasion of the field by men who did not know the first principles of serology, in spite of this author's caution not to attempt the test until several hundred known controls had been tried out. This was too much to expect from the man who paid $5.00 a package for stock reagents enough to make four or five tests. Our statistics have been greatly vitiated by records from men who accept the surface indications of a positive or negative reaction, regardless of the fact that they might be due to faulty technic, insufficient control, old, impure or incorrectly titrated reagents, contaminated tubes, indefinite incubation, stale or contaminated serum, and a variety of other causes.

It appears to your essayist that no amount of trouble, experimental work, expense of equipment or complexity of technic should weigh in the balance if by this means ambiguous reactions can be eliminated and weak positives definitely recognized. There is perhaps no other branch of work in which attention to detail and multiplicity of controls offers as great a return for the trouble in point of certainty of result, and scarcely any other in which laboratory diagnosis is the last court of resort, and yet these facts do not appear to be recognized. The proposed technic is the result of several years' experimental work, some of it with skilled serologists. It is merely the adaptation of modifications by various authors, and has seemed, after much experience, to serve better than any single man's technic, and it does not sacrifice any part of the Wassermann principle. In careful hands and with proper equipment it should eliminate the usual errors, e. g., spurious positives, and negatives where the serum is weak in antibodies.

Argument: When washed sheep's corpuscles are repeatedly injected into a rabbit, this animal's serum acquires the property of dissolving sheep's corpuscles at incubator temperature, when suspended in physiological salt solution. If such a suspension of sheep's corpuscles, with just enough rabbit serum to dissolve them, is kept in the refrigerator over night, the cells will have settled to the bottom apparently intact. If the mixture be now rapidly shaken and put into three tubes we can determine that this hemolytic property is due to two substances in the rabbit's serum, one of which was there before and one which was produced by the reaction to the injections. One tube is put into the incubator: the corpuscles dissolve. One tube is centrifuged and the supernatant fluid removed and heated to 55 degrees C. for 30 minutes; when cool, it is added to the corpuscles again; they do not dissolve. The third tube is centrifuged, the supernatant fluid removed and salt solution added; they do not dissolve. To both tubes we add a trace of rabbit's or guinea pig's serum; the corpscles dissolve. This shows that the supernatant fluid contained a substance necessary for hemolysis, which is rendered inert by heat, but can be replaced by the serum of a non-immune rabbit or guinea pig, and

*Read by title before the Mississippi State Medical Association, at Vicksburg, April 10, 1913.

consequently not produced by the immunizing reaction; it was there before treatment. The substance produced by injecting the rabbit, on the other hand, has combined with the sheep's corpuscles, since decantation of the fluid did not remove it or change it, yet it failed by itself to dissolve sheep's corpuscles, although it was the specific immune element in the reaction. It is the sensitizing substance or "amboceptor," the pre-existing substance being the "complement." Ehrlich explains it in this way (illustrating):

If we now bleed our immune rabbit, collecting the serum in sterile tubes, and "inactivate" this by heating to 55 degrees C. for thirty minutes, we have this sensitizing substance (without the associated complement) in permanent form. Its strength is tested and noted. It can be made to dissolve sheep's corpuscles after the addition of "complement" (fresh guinea pig's serum, 1:10). A measured quantity of a 5 per cent suspension of washed sheep's corpuscles, dilute guinea pig's serum and titrated dilute inactivated rabbit's immune serum forms the "hemolytic system." But our complement, being non-specific, is capable of combining with a variety of substances, provided the corresponding kind of "antigen" is added. If we have an antigen capable of binding complement to the virus of syphilis, it is thus appropriated and incapable of assisting in the solution of sheep's red blood corpuscles. If, then, we add the serum of a luetic patient to a mixture of syphilis antigen and complement, and incubate for an hour, the subsequent addition of corpuscles and immune rabbit serum, with incubation, will fail to produce hemolysis; this constitutes the positive reaction. If the patient's serum contained no syphilitic amboceptor, the second incubation will result in hemolysis, the hemoglobin will be diffused in the fluid, forming a clear, red solution, for, in this instance, the complement was still free. This second system (of complement, antigen and syphilitic body) constitutes the "anti-complementary system." In the first system, the corpuscles constituted the "antigen." Antigen, then, is any substance capable of binding complement by means of a specific intermediary (immune) body. The rabbit's serum is one specific immune body, the syphilitic virus contains the other. If the latter is present to bind complement, the subsequent addition of the former is without effect on the blood corpuscles, since no immune body can use complement already appropriated; the syphilitic virus has "deviated" the complement.

This looks simple enough, but it has been found that certain sera not syphilitic may give a "reaction," and rather many of the known syphilitic sera fail to react. To overcome these difficulties an endless variety of modifications has been proposed. Noguchi's modification was an attempt to simplify the test, but this introduced too many positives. His purpose was to introduce a test that could be used by the clinician, but any attempt to do serologic work without thorough familiarity with the principles involved and ability to eliminate sources of spurious reactions introduces too many errors and brings the reaction into disrepute. The Noguchi antigen was a distinct improvement and has been generally adopted. Recently, Homer Swift has increased its delicacy by adding lecithin.

Among the efforts to increase the delicacy of the reaction and to give us definite quantitative readings, so that incomplete negatives and spurious positives could be eliminated, the technic proposed by Coca and L'Esperance* is a distinct advance. They find that the improved antigen can be used quantitatively, so as to adjust its proportion more accurately to the unknown amount of antibody present in the serum, thus placing the test in the class of specific complement binding tests, so far as quantitative results are concerned. It is as delicate as bacterial complement binding tests. According to this method it is only necessary to observe in how many tubes hemolysis is inhibited, with a notation, to some extent, of the degree of hemolysis. The test is carried out in six tubes for each serum, five with varying strengths of antigen and one for negative control. I have added a seventh, which enables one to judge the presence and amount of natural anti-sheep amboceptor or the amount of accidental anticomplementary substance the patient's serum may contain, and allow for this in the second incubation. These authors also advocate an antigen one-fourth the anti-complementary strength, instead of half.

The question of raw or inactivated patient's serum has been answered for the "anti-human system'" (immunizing the rabbit against human instead of sheep corpuscles) by Noguchi, who has shown that inactivation may reduce the amount of syphilitic amboceptor (Wassermann body) to one-fourth or even one-fifth, and that there is no error introduced by using raw serum in such a system. Human corpuscles may, however, have an acquired resistance to hemolysis and the patient's serum may be antihemolytic for human

*Archives of Internal Medicine, Vol. II, No. 1, page 84, et seq.

corpuscles. Coca and L'Esperance claim to have shown that inactivation is not necessary when graduated antigens are used, even though the anti-sheep system is used, because any serum will find a group of antigen strengths in the series of five that will eliminate error in either direction. If only the strongest antigen reacts, the result is reported negative. These are the cases that have given the spurious positives, due to non-inactivation, and there are still four tubes that may show a reaction. This plan also offers a complete check on the accuracy of the titration. If the hemolytic system has developed a fall in complementary strength, the stronger antigen may of itself be anti-complementary; if too active, the stronger series will still give the reaction. In making up a combination of modifica-

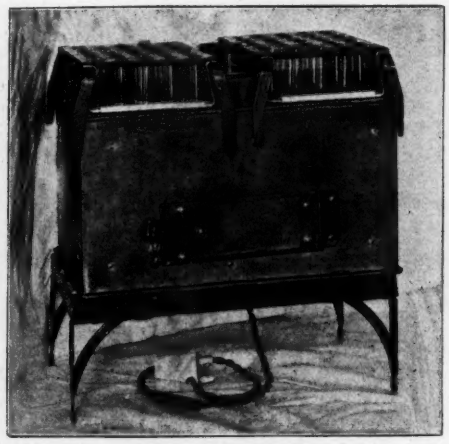

FIG. 1—Bath set up for incubation. (Plug disconnected for photographing.)

tions, it must not be forgotten that certain parts of one system may be incompatible with other systems, for instance, the original Wassermann antigen cannot be used with active sera, as this would give spurious positives.

There is also included in my control a series of tubes which afford a check on all the reagents in parallel time with the regular incubation. Since the complement may exhibit variation from hour to hour and is by no means of uniform strength (as shown by Noguchi), this parallel control removes practically all the elements of uncertainty in the titration. I believe no Wassermann test is valuable for diagnostic and statistical purposes which is not made with due regard for the most delicate adjustments of the reagents, time and accuracy of incubation and complete control at all times of every factor entering into the reaction. For incubation-accuracy the incubator here exhibited has been devised (Fig. 1). It holds ten series of seven tubes. Each tube rests in a separate pocket of the water bath, being entirely surrounded by a copper water bath, with a minimum of air space. The contents of the tubes catch the incubator temperature in 3 minutes, starting at 25 degrees C. The temperature of the bath is controlled by a cylindrical electric light bulb in a tunnel in the bottom of the bath (Fig. 2), controlled by a thermostat composed of a brass-gutta percha couple with a contact which makes and breaks with the slightest change in temperature. Thirty minutes' incubation in this bath completely binds complement.

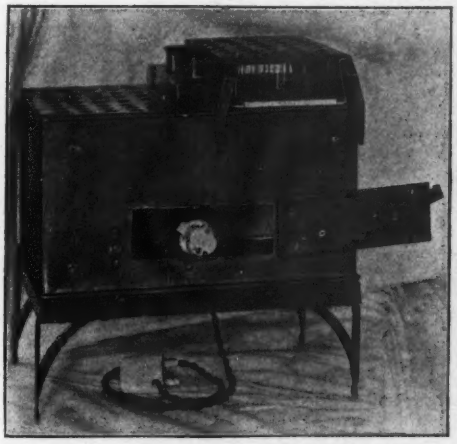

FIG. 2—Bath, with one rack removed to show pockets for test tubes; door of asbestos-lined support open to show water bath (black), which is conical, the apex of the cone directed downward and tunneled to receive cylindrical light bulb. The "make and break" contrivance is not shown.

This is obviously far more certain and rapid than repeatedly admitting cold air to the ordinary bacterial incubator, while examining or shaking tubes. In fact, it is quite impossible to tell how much incubation the tubes receive with such treatment. By means of this rack (Fig. 3) the entire set of tubes lifts out in one operation, and they can be shaken up in one motion; when replaced, each tube is at once surrounded by its own water bath and catches the temperature almost instantly.

After the usual preliminary titration of the reagents, the test is set up as follows: In the first

antero-posterior tier we put six tubes, for the reagent control. These are charged as shown in the table. The rear three control the hemolytic system, the fourth possible hemolysis from the complement, the fifth same for the salt solution (and both also abnormal solubility of the sheep's blood), and the sixth tube controls the anti-complementary power of the antigen, it containing equal to triple the strongest dose in the series with the sera. For this purpose we dilute .3 c. c. of titrated stock methyl alcohol antigen to 3 c. c. with salt solution, .6 c. c. of this being the smallest anti-complementary dose, and this amount goes into the sixth tube with the hemolytic system.

We then place as many sets of seven tubes into antero-posterior rows as we have sera to

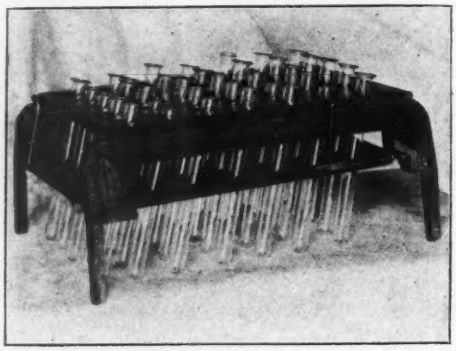

FIG. 3—Test tube rack on table, legs shorter tubes. Picture affords estimate of depth of pockets in bath and degree of excursion of swinging (lower) shelf.

examine, plus one set for positive and one set for negative controls. With a pipet graduated to .3 c. c. from the point we put this amount of the first serum into a beaker, add 1.5 c. c. 10 per cent guinea pig serum, eight hours old at room temperature, and 2.0 c. c. of .85 per cent salt solution; after shaking, we measure .5 c. c. into each of the seven tubes. This leaves enough surplus for waste. The quantities are equivalent to .04 c. c. serum and .2 c. c. complement. The rest of the sera are diluted and distributed in the same way. Now the back row (tubes "A") receives .2 c. c. each of salt solution and 5 per cent sheep corpuscles, the next row only the salt solution. Beginning now with the front row, each tube receives .2 c. c. of the antigen as diluted above. The remainder of it is diluted with an equal amount of salt solution and .2 c. c. of this measured into each tube of the second row. The remainder is again diluted this time to 2.5 volumes, and the third row charged with .2 c. c. each. The next dilution is by half again, and the fourth row of tubes get .2 c. c. of this. The rest of this dilution is diluted with 9 volumes of salt, making it 10 per cent, and .2 c. c. of this is for each of the tubes in the fifth row. This insures equal volume for each tube and accurate dosage as well. The amounts of antigen will be equal to the amounts given on the chart.

The tube racks are now shaken and set on the water bath, with occasional shakings during the next 45 minutes. The controls now speak for themselves. If tubes 2, 3 and 6 show complete hemolysis, tube 1 nearly complete, and tubes 4 and 5 no hemolysis (slight hemolysis in 4 is immaterial), we are ready for the second step. All tubes not having received blood get .2 c. c. of the 5 per cent suspension, and an amount of amboceptor, diluted to .1 c. c., indicated by the amount of spontaneous hemolysis in the tubes "A." If there was early complete hemolysis, no amboceptor is added, and the volume is made up with .1 c. c. salt solution. If complete hemolysis has occurred at the end of the 45 minutes, one unit is added, the rest getting two units. Incubation then proceeds for an hour or until the second row from the rear shows complete hemolysis. The racks are then put into the refrigerator over night and the next morning the number of tubes showing hemolysis and the degree of hemolysis are noted. If only the front tube of a series show positive, i. e., no hemolysis, this serum is reported negative; this throws out the spurious positives. The weak positives are shown up by varying degrees of hemolysis in the other tubes. At least two tubes must show not less than half the cells dissolved and one other some inhibition. Very strong positives are indicated principally by their ability to completely inhibit hemolysis with the weakest antigen. Syphilitic sera often react only with the weaker antigens; these sera would be reported negative if only one strength of antigen were employed, as is done in routine work.

There are a few more items concerning the delicacy of the reaction. If the hemolytic system in the control tubes in the first column show slightly too weak, a correspondingly smaller amount of corpuscles must be added; if too strong, the corpuscle suspension must be increased accordingly. If the antigen control show anti-complementary, the antigen is unfit to use and another tube has to be opened. If the complement is hemolytic, the amboceptor may be re-

moved by absorption or another guinea pig used. If the salt solution is hemolytic, the trouble is usually with the sheep cells; fresh, sterile solution in distilled water, of Baker's analyzed sodium chlorid, is never hemolytic. All these errors may show up even after a preliminary control of the reagents, which is, of course, always done, but this synchronous control places the fault, if any, or proves that titration error plays no part in the result.

I believe this modification and equipment provide a technic which never gives ambiguous results. It may be argued that this is too much trouble, but I must insist that there is no such thing as "too much trouble" even if the results are only slightly better than with the simpler technic. An unreliable Wassermann test is dear at any price.

On the serum side there are sources of error that the practitioner is responsible for. Craig and Nichols find that a state of intoxication can repress the reaction temporarily. Patients should be cautioned in this respect. Serum must be fresh and sterile. Contaminated serum and serum over twenty-four hours old may give an inverse reaction either way; that is, it may become anticomplementary or lose its Wassermann bodies. The patient must not be under treatment.*

To expect reliable results, you must have fresh, sterile serum from a sober patient who has not been under treatment for six weeks, and, if intramuscular injections have been used, the test may remain negative for six months. Intravenous injections of salvarsan or neosalvarsan give the most frank differentiation between cured and uncured patients. It is understood that the Wassermann reaction must have remained negative for more than a year before an opinion can be expressed as to a cure. If a definite syphilitic give a "negative," at least three more tests should be made at intervals of six months. Wassermann tests should also be supplemented, in suitable cases, with a Wassermann, a butyric acid, and a cytodiagnostic test on the spinal fluid. It is just in the latent group where weak positives must be recognized. No single antigen control method can be relied on to give a reasonable per cent of positive reactions in such cases. Any one considering multiple controls too much trouble had better refrain from making Wassermann tests. Do not condemn the Wassermann reaction without taking account of the personal factor.

Statistics of the percentage of positives to be expected in the various stages and under varying conditions are available in the literature. It is unnecessary to repeat them here, except to offer a simple mnemonic for percentage of positives in primary syphilis:

CHART.

Put down the number of weeks after the appearance of the chancre, thus 1, 2, 3, 4, 5.

In the fifth week you can expect four-fifths positive.

In the fourth week you can expect three-fourths positive.

In the third week you can expect two-thirds positive.

In the second week you can expect one-half positive.

In the first week you can expect one-fourth positive.

In the fifth, fourth, third and second, the divisor is the same figure as the corresponding week, the multiplier the number of the week preceding. In the first week the expected positives is half that of the second.

Suite 1112, Bank of Commerce Building.

*Also, for detecting spirochetes, the sore must be untreated for several days. The reason spirochetae are so rarely found in primary sores is because they have been under active treatment up to the moment of examination. If they had been dressed with simple salt solution for two or three days, there would be considerably more positive findings.

HOOKWORM DISEASE A NATIONAL PROBLEM.*

Wm. W. Dinsmore, B. Sc., M.D.,
Montgomery, Ala.

A new and illuminating chapter will ultimately be added to the already remarkable history of preventive medicine. Hookworm disease and the campaign for its eradication will form the subject of such a chapter, and it is safe to say that no other will contain so much of human interest. Through the combined activities of three score public health workers in this country, and in certain island possessions, it has been abundantly shown that hookworm disease no longer can be regarded as merely a local problem, affecting this or that Southern State. Still less can it be looked upon as a public health problem to be solved unaided in any given community within the borders of a commonwealth. These facts have been further emphasized by what has already been demonstrated in a short time during the remarkable campaign now being carried on throughout the Southern States in an effort to eradicate the disease. Such a malady, affecting as it does so many interests of all sorts and conditions of people throughout a tremendous area of densely populated territory, is probably more devastating than any other single disease we have to fight, with the possible exception of tuberculosis. It has, therefore, a nation-wide interest, and must be regarded as a national problem.

The subject may be conveniently discussed under the following heads:

1. The nature of the disease.
2. The causes underlying the existence and spread of the disease in its relation to the problem of soil pollution.
3. Its geographic distribution and how this affects the questions of immigration and quarantine.
4. Some results of the campaign as shown by statistics.
5. The economic and humanitarian questions involved.

No. 1—Group of patients at Honoraville, Cranshaw County, Alabama; 109 patients treated on this day.

Attention is called first to the **nature** of hookworm disease. A consideration of this is important in its bearing on certain observations which are to follow. First of all, the disease is specific and well defined, its whole train of signs and symptoms being dependent on an infection with a small thread-like worm, half an inch long, harbored within the small intestine. Moreover, this worm is a typical **parasite** whose victim is the human host, and, like others of its kin, it has a double life-cycle. Only one of these cycles—that of the adult stage—occurs within the intestinal tract of man. The worm is incapable of reproduction within the human host. This means,

*Read at annual meeting of Alabama State Medical Association, Mobile, April 17, 1913.

that every single one of the thousands of these little worms with which one individual may be infected represents that number of young larval forms, visible only with the microscope, which have made their way from polluted soil, through the skin and circulation, into the intestinal canal. The development of the first life-cycle of the parasite, which begins after the discharge of the eggs, must and does occur outside of the human body. A home ready prepared for this is immediately found in the soil. The soil so peculiarly adapted to the development of this first life-cycle is the warm, moist, sandy variety.

No. 2—Waiting for dispensary to open at 8:30 A.M., Jemison, Chilton County, Alabama.

Briefly stated, then, the all-important underlying cause of the widespread existence of hookworm disease is soil which has been polluted by reason of man's unsanitary habits of living.

It is the consideration of these fundamental facts concerning the nature and cause of the disease which is important in this discussion.

The ultimate eradication of hookworm disease depends upon two fundamental propositions, namely: (1) the prevention of soil pollution; (2) the curing of all infected persons. Theoretically, if either one of these tasks were accomplished, the stamping out of the disease would be a finished job. Experience has shown, though, that far more practical results—results that are really tangible—are obtained by concerted, systematized efforts directed toward a solution of both problems. Manifestly, however, of the two propositions here mentioned, the prevention of soil pollution would be considerably more far reaching in accomplishing greater things for sanitary medicine than would merely the curing of all hookworm sufferers; for, not only would hookworm disease itself then be eradicated, but the spread of other scourges, notably, typhoid fever, cholera, and the dysenteries, would be easily controlled. Soil pollution, therefore, the real underlying cause of the existence and spread of hookworm disease, is a question of special interest, so far as hookworm disease as a national problem is concerned; for, as already intimated, if we stamp out this malady by remedying the filthy, unsanitary conditions existing throughout the length and breadth of that territory affected by the disease, we will, too, solve the problem of prevention of other death-dealing diseases which also exist and spread so largely by reason of polluted soil.

To illustrate the force of this statement consider, for example, certain facts bearing on typhoid fever. It is admitted that this disease is preventable, and that its prevention depends, in its last

analysis, upon the sanitary disposal of human excreta. The same conditions identically which give rise to soil pollution, as regards hookworm disease, equally admit of soil pollution with the discharges of typhoid sufferers and typhoid carriers. Then, if we eradicate hookworm disease by the prevention of soil pollution, we will also control the spread of typhoid fever. In the light of these facts, consider the tremendous significance of the following statistics, reported by Dr. Allan J. McLaughlin,* of the United States Public Health Service. In the year 1910 fifty registration cities in the United States, having a combined population of over 20,000,000, showed an aggregate typhoid death rate of 25 per 100,000 inhabitants. It is conservative to say that 25 **deaths** per 100,000 population represent 200 **cases** of the disease. These figures show, then, that because of improper disposal of human excreta of typhoid sufferers and typhoid carriers, there occurred in these fifty cities in one year 5,000 deaths among 40,000 cases of a preventable disease. These are startling figures; yet when we estimate such statistics for the United States as a whole, the figures are even more appalling, for undoubtedly the number of cases and deaths from typhoid fever in the smaller cities and towns, and throughout rural communities where soil pollution is so extensive, must be even greater than in the fifty registration cities. It is estimated, therefore, that there occur in the United States every year 16,200 deaths among 175,000 cases of this filth disease.

From January, 1907, to October, 1911, there occurred in Russia 283,684 cases of Asiatic cholera. According to a conservative estimate there occurred in the United States during the same period one million and a quarter cases of typhoid fever, or more than four cases of typhoid fever in the United States for every case of cholera in Russia. In Italy in 1910 there occurred 16,000 cases of cholera with 6,000 deaths; yet in the same period we had in the United States more than half a million cases of typhoid, with 50,000 deaths. In 1909 there were more cases of typhoid fever in the United States than there were cases of plague in India; yet the population of India is two and a half times that of the United States. Many of us would not hesitate to say that these foreign countries are pest-ridden. Hookworm disease and typhoid fever are less dramatic, perhaps, in their ravages, but their toll of human life is far greater.

This significant relationship, then, of typhoid fever and hookworm disease to the question of soil pollution is sufficient in itself to justify one in considering hookworm disease and the campaign for its eradication as a national problem.

No. 3—Rural school, Washington County, Alabama. Seventy-five per cent of these children found infected with Hookworm Disease.

No phase of this subject is of greater significance than the geographic distribution of hookworm disease. The results of a survey of this and other countries to determine this question have forced a consideration of several important problems, the most interesting of which concern questions of immigration and quarantine, and some of the tremendous economic issues involved. The findings of this survey have also emphasized how enormous is the undertaking which proposes to eradicate hookworm disease, and how great is the need for a world-wide movement by definite, concerted action.

Certain reports by Wickliffe Rose, Administrative Secretary of the Rockefeller Sanitary Com-

*U. S. P. H. Rep., Vol. XXVII, No. 12.

mission, give the most recent facts brought to light by this survey, and the following statements are quoted from these reports.

"Hookworm infection belts the earth in a zone about 66 degrees wide, extending from parallel 36 degrees north, to parallel 30 degrees south; practically all countries lying between these two parallels are infected."

Extensive areas, having varying degrees of infection, have been definitely defined on the continents of the two Americas, Europe, Asia, Africa, Australia, and many island possessions of these countries. Aside from our own Southern States, reports show that hookworm disease has become a very serious problem in fifty-four foreign countries. In at least forty-six of these the infection is general and widespread, thus affecting nearly 920 million people, and an area of more than fourteen million square miles. To this may be added eleven of our own States, with a population of almost twenty-one million, and an area of 510,000 square miles. "Of the total population of the globe—about 1,600,000,000 in round numbers—about 940,000,000 live in countries where hookworm disease is prevalent."

"Infection has been demonstrated in 93 of the 100 counties in Virginia; in 99 of the 100 counties in North Carolina; in 140 of the 146 counties in Georgia; in every county in South Carolina; in every one of the 67 counties in Alabama; in 77 of the 79 counties in Mississippi; in 27 of the 59 parishes in Louisiana; in 57 of the 75 counties in Arkansas; in 95 of the 96 counties in Tennessee; in 22 of the 119 counties in Kentucky, and in 83 counties in Texas. In addition to the States above mentioned, infection has been demonstrated in Florida, California, Nevada, Oklahoma, West Virginia, with very strong clinical evidence of its presence in Maryland."

In the light of these facts concerning the wide spread distribution of hookworm disease, the importance of immigration regulation is obvious; indeed, it is a question which becomes more and more serious from year to year, in view of the ever-increasing stream of immigration into this country. The National Government has given some recognition to this fact. Accordingly, the immigration act, regulating the admission of aliens into the United States, and providing for medical examination of immigrants, now prohibits the admission of any immigrant who is found to have hookworm infection.

To show the urgent need of a rigid enforcement of this regulation, the following figures may be cited: At the station on Angel Island, San Francisco, from September 23, 1910, to November 30, 1911, the stools of 2,255 immigrants were examined microscopically. Of this number, 1,077, or nearly 50 per cent, showed hookworm infection. Japanese, Chinese and Hindus constituted over 80 per cent of the total number examined. These figures, though small, and representing the results as shown at but one immigration station, are none the less significant, especially in view of the fact that the southern two-thirds of the Chinese republic has a heavy infection, reaching in some places as high as 70 per cent, and that 60 to 80 per cent of the 300 million people of India are victims of the disease.

The economic loss resulting from hookworm disease is enormous. Agricultural pursuits of all

No. 4—Family of nine, all heavily infected, en route to free dispensary.

kinds the world over are suffering tremendous losses; likewise the mining industries in this and foreign countries.

Space does not permit a detailed discussion of this problem, but one or two examples may be cited which will serve to point out the relation of this question to the campaign for the eradication of the disease.

It is conservative to say that the loss in efficiency occasioned by hookworm infection ranges from 20 to 60 per cent. This statement is borne out by information gathered from all sources throughout the widely infected territory.

Take, as an example, the economic loss from hookworm disease in one of the more mildly infected counties of this, or any State. The average population of our counties is 30,000; the average heavy infection in those campaigned is over 30 per cent. To be unduly conservative, let us

estimate the loss in an average county of 30,000 people with a 10 per cent infection. Further, that we may err, if err we must, on the safe side, let us assume that this 10 per cent infection is so mild that each of those infected can, in an eight-hour working day accomplish a good seven hours' work. In such a county we would have 10 per cent of thirty thousand; that is, three thousand people losing one hour a day—a loss of three thousand hours per day. Dividing by eight—the working period—we get the number of

No. 5—Twin sisters, age 18. Smaller girl heavily infected. Shows dwarfing effect of the disease.

working days lost every year—three hundred and seventy-five, which figures, of course, also represent the annual loss of work in years. Is there any county in any State which can afford to lose three hundred and seventy-five years' work annually—an amount of work that, figured in dollars and cents with a wage of only three hundred dollars a year taken as an average, amounts to no less than $112,500?

But we need not avail ourselves of theoretical statistics, striking thought they may be. We have a mass of facts and figures, gleaned from a number of different countries and a variety of sources, including coffee and cocoa plantations, cotton mills, coal and gold mines, etc., from which facts and figures we may pick a few examples which typify the whole.

The physically sound coffee-picker in Porto Rico picks from five hundred to six hundred measures of coffee per day. Scores of anemics report that they can pick only from one hundred to two hundred and fifty measures per day. According to estimates from the managers of the large plantations there hookworm disease has reduced the average efficiency of the labor on these plantations to from 35 to 50 per cent.

In one of the largest cocoa plantations of Brazil, at Babahoyo, of three hundred laborers, more than two hundred are incapacitated by the ravages of hookworm disease and chronic malaria.

In California, in Mine No. 2, at Jackson, where over three hundred men are employed at an average salary of $2.50 per day, the average annual loss in wages alone is over $20,000; and this estimate is for one mine only.

It is needless to multiply these examples. The story told by one is the story of all. Speaking for Porto Rico, Dr. Ashford says: "Anemia in Porto Rico is a medico-socio-economic problem, which cannot be solved without her physicians. Once solved, she will enter upon an era of prosperity which today our most extravagant dreams cannot foreshadow."

A review of certain features of the campaign throughout the Southern States brings to light the real human-interest side of this whole problem. For a more detailed discussion of the various activities of this campaign, reference should be made to the second and third annual reports of the Rockefeller Sanitary Commission.* It will suffice here to quote from a summary just issued by Wickliffe Rose. In 1911 and 1912, in the Sanitary Survey, a total of 103,346 farm homes, taken at random in 308 counties, scattered over eleven States, have been inspected. Of these, 50,637 have no privies. The preliminary infection survey has been completed in 230 counties in eleven States. The total number of rural children between the ages of six and eighteen years examined microscopically is 158,555. Of these, 78,572, or 50.9 per cent, were found infected.

In the same period 233 counties have appropriated a total of $36,543.06 to aid in the work of the campaign.

Free dispensaries for the examination and treatment of hookworm sufferers have been operated

*725 Southern Bldg., Washington, D. C.

in 237 counties, and for the two years 1911 and 1912 a total of 327,265 microscopic examinations have been made, and treatment has been given to 223,904 patients.

The total number of persons treated in eleven States for three years is 393,556. This means the treatment of 359 persons a day for every day since the work began.

Deserving of special mention also are some figures given in the report of the work on the island of Porto Rico, as set forth by Dr. Bailey K. Ashford,* Major of the Medical Corps of the United States Army, who with King and Igaravidez formed the (first) Anemia Commission, whose monumental work on this island furnishes one of the most interesting and instructive chapters in the history of endemic disease. It would be impracticable to attempt any review of this work in this discussion. The elaborate reports of the commission make it unnecessary to give here any detailed account of the work.

After reciting in detail the "history of a ten-years' campaign against uncinariasis in Porto Rico," Dr. Ashford concludes the chapter with the following statement: "The sum total of persons treated for uncinariasis to June 30, 1910, is 287,568. This represents the work of the commission and its successors, the anemia dispensary service, and the service of tropical and transmissible diseases, since the beginning of the campaign of 1904. We estimate that at least 30,000 more have been treated apart from government work, and of which we have no record. We are entirely safe in saying that over 300,000, or nearly one-third of the population of Porto Rico, have received specific treatment for uncinariasis."

The Hookworm Commission of the Alabama State Board of Health is entitled to the credit of first successfully establishing the type of free dispensary now operated throughout the Southern States for the examination and treatment of hookworm sufferers. This dispensary work has become a permanent part of the activities of the Hookworm Commsisions of the several State boards of health which are carrying on this campaign. It is but one of the means employed, however, in reaching the people. Space does not permit a discussion of other important phases of the educational campaign which is being carried on by means of illustrated public lectures, school inspections, and distribution of hundreds of thousands of leaflets, bulletins, etc.

Nothing is more appealing than many of the stories told by patients, who flock to these free dispensaries. They often come, too, despite severe weather conditions. In communities where the infection is heavy, and after the dispensary has had a few days within which to demonstrate its effectiveness, the people come in throngs; they come by boat, by train, by private conveyance, for twenty and thirty miles. Our records contain stories of men, women and children walking in over country roads ten and twelve miles, the more anemic at times falling by the way, to be picked up and brought in by neighbors passing with wagons. As many as 455 people have been treated at one place in one day. Such a dispensary group will contain men, women and children, from town and country, representing all degrees of infection and all stations in life. In this connection it is interesting to note a statement which has been made by Dr. Eliot, President Emeritus of Harvard University. He says: "On the whole, the evidence seems to show that the

No. 6—Patient, age 57. Heavy infection; haemoglobin, 20 per cent. Incapacitated for four years. After five treatments, was greatly improved, and reported that she was able to do a day's work for the first time in four years. Case reported by Dr. Grote.

*Uncinariasis in Porto Rico, Senate Document No. 808.

campaign of the Rockefeller Sanitary Commission against hookworm disease is the most effective campaign against a widespread disabling disease which medical science and philanthropy have ever combined to conduct. Although the mortality is not so great from this disease as from smallpox, cholera, diphtheria, and bubonic plague, yet the human misery and disability it causes is probably greater in the long run than any one of those somewhat spasmodic or periodic plagues occasions."

A story of a physician's own case, as related by him in a letter to Dr. S. D. Porter, of Louisiana,

No. 7—Fatal case hookworm disease. Death resulted from intestinal perforation. 2,300 hookworms were recovered from this patient. (Reported by courtesy of Dr. A. G. Fort, Atlanta, Ga.)

is of special interest in this connection. The letter, written by Dr. J. M. Moseley, of Arcadia, La., reads as follows:

"Since my experience with hookworm disease has been unique, I take pleasure in giving you a rather detailed account of how it served me. In the fall of 1907 I noted that I was unable to do as much work as I had done before; the only symptom was a feeling of lassitude. My appetite was good, and, with the exception of a disinclination for work, I was in very good condition. This continued until January, 1908, when I gave completely out and had to take a rest. After one month spent in the country I was able to resume work again. After two months' work I noticed that my feeling of lassitude was coming back again, and, added to this, I began to suffer with indigestion. I suffered with pain in the right hypogastric region; at times it would be intense. Pressure over the region of the gall bladder was intensely painful most of the time. I realized that some serious trouble was brewing in that neighborhood, and consulted my friends in North Louisiana. They palpated the region; they asked me all the questions a man must answer; they figured on every possibility, and at last decided that so much suspicion was directed to my appendix that it must come out. In June, 1908, I was operated on for appendicitis. Apparently my symptoms gave way for a while, but within a few weeks the old pain returned, and my inability to handle food rendered my life almost intolerable. In October, 1909, I gave up work again for thirty days, returning to work in November, and after two weeks I completely collapsed. During 1908 my condition would improve, then get worse, and so I passed the year merely living, doing what work I could best handle without much effort. From time to time I was examined by our best men in North Louisiana, several of whom wanted to drain my gall bladder. I found considerable relief in salol and castor oil, taking about three doses a day. This gave me more relief than anything else. I was unable during this time to handle any type of food except the very lightest and most easily digested, going for days on two or three glasses of milk, and that diluted. During 1910 the story of 1909 was repeated, except that I had about decided that no one knew my trouble; and, as I could neither die nor get well, and my condition had hung fire over a period of two and one-half years, I had begun to catch at straws. In January, 1911, I developed a jaundice that lasted two weeks, my other symptoms remaining the same. When the health train came through my town, Dr. Cary examined me for 'hookworms,' and found that I was heavily infected. I took the treatment that night, and my improvement from that day to this has been to me phenomenal. The first month I gained ten pounds. I could eat all types of food that other people ate; my appendicitis was well, the gall-bladder symptoms disappeared; I felt like a new man with new aspirations and renewed energy. I have made investments in real estate, as well as

other things, and some of them have given good results; if I could have invested one thousand dollars ($1,000) in two doses of thymol two years ago, it would have been the greatest investment of my life. The loss to me during this time in being unable to handle properly my practice has been more than double this amount. I have treated many cases of hookworm disease. I have seen the roses come back to the cheeks and color to the lips of children and adults; I have seen them go back to work with renewed energy and brighter hopes. During this time it never occurred to me that I was harboring those same little parasites. My friends who worked so diligently to discover the cause of my trouble were just as much shocked as myself to know the cause that kept me down during this time. You may rest assured that I am enthusiastic, and that I will render all aid in my power to assist you in the campaign."

Dr. C. L. Pridgen relates the following story of a case treated in his dispensary work in North Carolina. His letter is as follows:

"The case in point was seen at the dispensary held in Chadbourn, Columbus county, and served to bring many others in to us. The boy was about fifteen years of age when seen. His father had heard his neighbors speak of the work that we were doing, and had read the pamphlets and dodgers that we had sent out. His curiosity was aroused, and when he heard the results of the treatment given to two other boys in similar condition to his son, he determined to bring his boy to see me. The boy was a typical subject. His skin had a cadaverous appearance; the membranes were almost white, and there was extreme lassitude and apathy. He seemed to take no notice of the crowd or the exhibits on display, and submitted himself to a physical examination with the most profound indifference. When the examination was completed he at once turned, without waiting to hear the diagnosis, and went to a log near by and sat down, apparently very fatigued.

"There were so many similar cases in the great crowd that pressed upon me that no further attention was given the boy except to caution the father as to treatment, explaining that I was giving him a small dosage, and asking him to return for a second treatment, and to let me know how the boy progressed. The case was forgotten until at a later dispensary the father came back to see me to pour out his thanks and tell me of the wonderful improvement. He said that the boy had always been of no account—worthless, trifling. He said that he regarded it as a case of laziness and worthlessness. He said that the boy would lie on the porch like a dog, day after day, apathet'c. He could not be aroused to either work or play. The father said he could not believe that it was sickness, because whenever the bell rang for meals the boy was up, the first at the table and the last to leave, and ate more than the farm hand.

"The boy responded at once to the treatment and picked up vitality in a remarkable way. He began to take interest in many things and to help with the work. The economic value of this treatment can be best presented just as the old farmer told it to me. 'Aside from saving my boy,' said he, 'this thing means money in my pocket. Before I saw you I had to feed and clothe him and care for him at a dead expense, and with no hope that it would ever be different. I had to hire a man to take the work I had counted on his doing, which cost me $1 a day. Now I have figured this thing out this way: I am not only saved the dead expense of his doctor's bills and medicine, and all that, but I am saved the price of the hand which I have discharged, which is $1 a day, not for a day or two, not for one or two years, but for many years, until he is grown and leaves me to make his own way in the world. I consider,' he said, 'that this is the darnedest best investment I ever made.'"

No. 8—Illustrating how patients who come to the free dispensaries are given instruction in the cause and prevention of hookworm disease. Two physicians are in charge of dispensary: Dr. C. A. Grote, standing; Dr. Johnson, Clanton, Ala., at the microscope.

The following is typical of hundreds of similar stories on record, told by patients who seek re-

lief at free dispensaries: On January 24 of this year I visited one of our dispensaries in Clarke County, Alabama. Dr. W. W. Perdue was in charge of the field work in this county. The day was dark, cold and rainy; but, despite the weather, we examined and treated that day 101 hookworm sufferers. Seventy-five per cent of these patients had come distances of three to ten miles over wet, muddy roads.—ragged, rain-soaked, weak, pale little children; in the face of every one a pitiful story was written. It was distressing to note their utter lack of development in every way—each a victim of hookworm disease, which was destroying their very potentiality, physically, mentally, and morally. One man came seven miles with his five children, ages 2, 5, 7, 9 and 10 years. He held in his hand little bottles containing hookworms obtained from each of them by previous treatments. He said to Dr. Perdue: "I want another dose, too, for the little fellow who give out on the way." I asked this man if any of his children were in school. He replied: "No; I would like to send them, but I have to work 'em to make a living."

Viewed in the light of its humanitarian aspects, in the light of its methods of reaching out and uplifting the common human lot, and considering what is daily being accomplished towards the building up of a better race, and noting further the tremendous economic importance of the task, I believe this movement is without a parallel in the whole history of human endeavor.

When one goes out into the field and there meets face to face hundreds of little children, pale, weak and anemic, bloated and ill-nourished, crippled in mind and body, existing in utter poverty, often indeed in base illiteracy, all as a result of hookworm infection, and then later sees these conditions all changed and bettered, oftentimes indeed sees even a real transformation brought about through this campaign of education and the curing of these children—when one notes these facts, for facts they are, and then listens to some ill-informed individual declaring that "there is nothing in this hookworm business," proclaiming his alleged patriotism by denouncing what he imagines is a base slander of "this fair Southland of his," one is forcibly reminded of the closing lines of the verses by the distinguished ex-Secretary of State, John Hay, who, after reciting a story of the saving of a little boy from a tragic death, observed: ". . . That saving a little child, is a durned sight better business than loafing around the Throne."

SOME PRACTICAL PHASES OF THE TYPHOID PROBLEM.*

By P. B. Moss, M.D., State Pathologist.
Montgomery, Ala.

Typhoid fever is such a common disease that, like rabies in Alabama, many persons have come to look on it with more or less indifference and consider it a thing to be endured; a part of life, just as cold, rainy weather in winter, or extremely hot days in summer. To a student of public health problems, it is always interesting to note the excitement of the laymen and the lay press over a sporadic case of meningitis or some such infrequently occurring disease, and the utter indifference for the most part to thousands of cases of such a disgraceful disease as typhoid fever; and what is worse is the fact that while we do not pretend to know all about its prevention, we do know so much that is not made use of.

A few figures will serve best to illustrate how prevalent this disease is: In the registration area of the United States alone, about 130,000 cases and 13,000 deaths occur each year due to this scourge; and it is estimated that these figures represent only about one-third of the cases which actually occur. In the English army in twenty years, from 1890 to 1909, there were 26,510 cases with 6,494 deaths.

The mortality ranges from 5 to 30 per cent, varying with the severity of the epidemic.

The manner of the distribution of the disease may be discussed under five heads as follows: (a) water, (b) milk, (c) other food products, (d) contact, including flies, (e) carriers.

The large epidemics are usually caused by an infected water supply, and this is probably the most important means by which the disease is spread. It is doubtful if typhoid bacilli persist in any water more than a month or two even under the most favorable conditions, and in shallow, flowing water, especially when exposed to the direct rays of the sun, it is usually agreed that they die out in a few days; it is also interesting to note that they will live longer in comparatively clean water than in dirty water in which various heartier bacteria are abundant. Clean, still, warm water, not exposed to the sun, offers the best conditions for their preservation and propagation, but even extreme cold and moderate drying does not always kill them. They have been known to live for months in frozen snow and have been capable

*Read at annual meeting, Alabama State Medical Association, Mobile, Ala., April 16, 1913.

of producing the disease after the snow melted. Ice made from typhoid-infected water can preserve the germ alive over long periods.

Typhoid fever is a rural, rather than an urban disease; the most important reason for this fact being that the larger cities have good water supplies. The open well, with "its moss-covered bucket," so noted in song, but so dangerous in reality, is a constant menace to the farm; the small towns drawing their water from their much-boasted springs—springs which originally were pure, but which have long since been infected by the sewage of the towns which have grown up around them; other small cities which use surface water from an unprotected watershed without preliminary purification; all are constantly exposed to the possibilities of an epidemic of this disease.

I must pause here to state that from my own observation the towns and cities of Alabama which are dependent on springs located in limestone formations are peculiarly exposed to this possibility of infection.

Milk is a not uncommon means of spreading the disease. It is peculiarly so because it offers an ideal medium for the multiplication of the germs after they get into it, and because it is used so generally in an uncooked state.

It is, of course, necessary that the organism be introduced either directly or indirectly from some individual who has the disease or who is a "carrier," as typhoid fever never occurs in lower animals.

Common modes of infecting milk are, by using infected water to wash milk utensils; contact of dairy attendants with cases of fever in their families; collection of milk bottles from houses where typhoid fever exists and using them without proper sterilization; employment of typhoid "carriers" as milkers, or in other capacities around dairies.

Ice cream may also serve as a means of spreading the disease.

Many other articles of food are occasionally implicated in the causation of typhoid fever; this especially applies to vegetables eaten in an uncooked state, or foods which are handled in an unprotected state after cooking, such as baker's bread and cooked meats which are sold in shops.

Recently attention has been called to the danger of using as fertilizer human excreta. In certain parts of the United States, but more commonly in tropical or European countries, this is a very common practice, the excretions being used not only as a fertilizer to be mixed with the soil before planting, but in a liquid state sprinkled over the growing vegetables. It has been ascertained that typhoid bacilli may remain on the leaves and fruit of growing vegetables, even exposed to light and air, for over thirty days, and they may persist in the soil for an indefinite period and be pulled up with the roots of the plants.

Probably more cases of typhoid fever are contracted through contact, direct or indirect, than by any of the means above mentioned. Secondary cases in the same family, or among relatives or visitors to the sick, are everyday occurrences. Flies and probably other insects frequently carry the germ from the sick room or non-disinfected excretions to food of other persons; our much maligned, and justly so, "common drinking cup," has also been proven to aid in indirect infection. It is not improbable that physicians do occasionally carry the disease through carelessness.

From the standpoint of difficulty of solution the "healthy typhoid carrier" is a most serious problem. It is estimated that one in every twenty-five persons who has typhoid fever becomes a carrier after recovering from the attack. The organism may become acclimated to its surroundings and remain in the person for a great many years, there being a number of cases where it has been found in the urine or feces of persons who had typhoid, twenty-five to forty years before. Probably 90 per cent of all persons who have the disease excrete these organisms for a short period after recovering unless some measures are used to destroy them. It is thought wise by some authorities to consider all cases of gall bladder infection as probable typhoid carriers. One investigator states that one in every five hundred healthy persons who has never had typhoid fever is a carrier. If all these figures are true, it is easy to see how difficult it is to handle this phase of the problem.

A case which has come under our observation will serve to illustrate. In October, 1911, there was a small epidemic of typhoid fever in the Alabama School for the Deaf at Talladega, some fifteen or twenty cases occurring all told. After eliminating to a reasonable extent water, milk and food supplies, we were at a loss to account for the fever, and as a last resort considered the possibility of a carrier.

Owing to the fact that the children and some of the other employees could not speak verbally or understand us, the difficulty was increased. By the aid of the teachers we selected from among them all persons who had had any sickness within a year or two which might have been typhoid

fever, and also all who had had any such sickness in members of their families with whom they were associated; there were about twenty in these classes.

Specimens of blood for Widal test were taken from each of the twenty, and positive results were obtained in three instances. One of these was a servant employed as a house maid who gave a history of an indefinite train of symptoms during the previous month, being in bed only a day or two; she was not associated in any general way with many of the persons taken sick; her urine and stool proved not to contain B. typhosus. The second case which gave a positive Widal test was a young child, and her excretions likewise proved negative culturally. The third, "S. T.," a little girl about twelve, had had no illness of any kind, but stated that her "sister had been ill for several weeks the previous summer, and had had pains in her stomach, and the doctor came every day." This history sounded enough like typhoid fever to make us suspicious. Typhoid bacilli were isolated from both the urine and feces of this child. It is interesting to note that the urine appeared to be a pure culture of B. typhosus; it was possible to use it in place of a boulion suspension of typhoid bacilli in a Widal test and obtain complete agglutination of all bacteria. This child had become infected by being associated with her sister, and because of a natural immunity or some other reason, she was never taken sick with symptoms of the disease, and was only discovered to be infected because her blood gave positive agglutinative results. The organisms isolated from her excretions appeared to be identical and were proven to be B. typhosus beyond doubt, being subjected to the usual cultural tests, and being agglutinated by known typhoid sera of high titre, as well as producing antibodies in rabbits inoculated with them so that their sera agglutinated stock cultures of B. typhosus at a dilution of 1-400.

This child was without doubt the cause of the epidemic in the school, and the case illustrates forcibly the difficulties which we must overcome in handling this disease.

Recent literature abounds in reports of cases which have been responsible for epidemics, many of these unfortunates being discovered after a dairy has been singled out as the focus of an epidemic.

Prevention.—This paper is written with two main purposes in view: First, to call attention to the frequency of carriers, and, second, to emphasize the value of typhoid vaccination. Obviously, it is impossible to discuss in detail all the measures advisable in preventing the spread of typhoid fever, but the most important ones will be touched on. In the order in which we have discussed the mode of distribution of the disease, we will take up its prevention.

Of foremost importance is the protection of water supplies, both public and private. With the present system of several years tenure in office of health officers in Alabama, it is possible for them to make this problem one of intense study and become thoroughly familiar with the conditions intrusted to their care. At the present time the State Board of Health can offer considerable assistance to local authorities in the form of bacteriological examination of water and in advice of a general nature. We will take this opportunity of repeating our invitation to the physicians of the State, and especially to the health officers, to call on us freely for work of this kind. In cases of epidemics the board can also supply a member of the staff to make an investigation. We have not yet gotten to the place where we can supply the advice and services of an expert sanitary engineer, but in the course of a few years I hope to see such a department added to the service. As soon as practicable we hope to have emergency hypochlorite apparatus which can be rushed to any part of the State on short notice and used as a temporary measure in controlling an infected water supply. This is being done in other States at this time.

The disposal of sewage is another matter needing study, but which can receive little attention from the State Board of Health until we have an engineering department.

Control of sale of milk is a problem of greatest importance to the larger cities, and is being handled in a satisfactory manner by them for the most part. We wish to suggest here that a closer watch be kept on the practice of delivering to and collecting milk bottles from houses where fever exists, and that the danger of allowing typhoid convalescents to work around dairies be borne in mind.

The better protection of baker's bread, preferably with paper wrappers, is a point of some importance, and laws requiring protection of fruit and vegetables which are to be eaten raw, especially from flies, should be enforced in every town.

It is a frequently neglected duty of the physician to educate his patients on the prevention of the spread of the disease after it has entered a family; of considerable assistance to this end,

as well as of great educational importance, is a circular which the State Health Officer has ready to send to press; copies of this may be obtained on request. Of prime importance to the end of prevention is early recognition of the disease; this is often impossible without laboratory aid. The Bass method of agglutination test is of considerable value in the hands of one accustomed to its use and interpretation, but has little value to the average physician, who would never use it once in two months, and has not been trained in laboratory methods. Here again, the State Laboratory offers its aid in diagnosis; tubes and mailing cases are furnished on request, the work is done free of charge, and the report will be wired, when requested.

To our mind the solution of the typhoid problem resolves itself into the discovery and cure of typhoid carriers. The first step in this direction is to treat every case of typhoid fever, and its associates, including nurses in attendance, as cases of diphtheria are now treated in every well-regulated city. No physician in a city thinks of releasing from quarantine any person who has recovered from diphtheria until he has assured himself by repeated negative examination of cultures from the throat, that the patient is no longer harboring the disease germs. Why would it be any more unreasonable to require that every case of typhoid fever be treated as a suspect until he has been proven not to be dangerous? When it is taken into considera ion that one in every twenty-five persons who has recovered from typhoid fever is a carrier, and may remain so the balance of his life, that he may, in a moment of carelessness, or even without carelessness, infect a thousand innocent persons, does it not seem reasonable that some stringent measures should be used to prevent such trouble?

As a solution of this problem we would suggest that every case of typho'd fever be kept in close quarantine, and before isolation is discontinued, that at least two specimens of urine and feces be submitted to a competent bacteriologist for cultural examination for B. typhosus; that at least two negative reports on specimens collected at intervals of several days be obtained before the case is discharged. As an extra precaution it is advised that those in actual attendance on the sick be also examined.

The State Laboratory is prepared to make these examinations, and will do so free of charge on request of any physician.

In conclusion, I wish to mention briefly the subject of typhoid vaccination. This is, I am convinced, the most important step which has been taken in many years in solving this problem. This practice has now been extensive enough to allow the unqualified statement that, when used properly, there is no danger whatever connected with its use. It is unnecessary to quote from the hundreds of reports which tell of the brilliant results obtained from its use. Of course it finds its most fruitful field among such bodies of men as armies in active service, which are composed largely of men at the most susceptible age, and exposed frequently to unsanitary conditions and unsafe water and food supplies; but there is a wide field of usefulness in every day practice. Every honest physician now feels that preventive medicine is a greater duty than curative measures, and that he is untrue to his ideals, is not doing his duty toward his patients, if he does not do more than merely treat their ailments. Every person between the ages of three and forty-five who has not had typhoid fever should receive prophylactic inoculation at least once every three years. I hope that the State Board of Health will soon be in a position to supply the vaccine to any one who desires it, or at least to indigent persons.

The preparations now on the market by reliable manufacturers are, we believe, satisfactory, and the directions for use accompany each package.

As regards the use of the vaccine in the treatment of typhoid fever, the advisability is questioned; certainly it is theoretically illogical, and while there are a good many reports of apparently good results, the question is not settled, and for the present it seems inadvisable to add toxin to an already overloaded organism.

Office of State Board of Health, Montgomery, Ala.

THE RECTAL INOCULATION OF KITTENS AS AN AID IN DETERMINING THE IDENTITY OF PATHOGENIC ENTAMOEBAE.

By S. T. Darling, M.D.,

From the Board of Health Laboratory, Ancon, Canal Zone.

On account of the divergent opinions held at present as to the identity of trophozoites of entamoebae found in cases of dysentery, it would seem that a study of the changes in the morphological features undergone by entamoebae in the colon of kittens would do much towards bringing about some unanimity of opinion with regard to the cause of entamoebic dysentery.

The writer has already shown (1) that trophozoites in tetragena dysentery undergo developmental changes when inoculated rectally into kittens.

As the result of a study of experimental entamoebic dysentery, which may be provoked with ease in kittens by the rectal injection of fresh material from entamoebic stools, the writer can not agree with those who believe that degenerative changes in the nucleus of entamoebae occur more easily in the kitten than in man. Material in either case should be as fresh as possible, for degenerative changes in trophozoites from tetragena dysentery in man have not been uncommonly observed.

When a person is infected with **E. tetragena,** and trophozoites first make their appearance in the stools, they display certain familiar features. The trophozoites are large, the nucleus relatively small, while the cytoplasm is always free from chromidia (crystalloidal substance—Chatton), and cysts are never seen. If the individual is energetically or successfully treated, or in any case recovers from the infection, trophozoites disappear from the stools and the infection is at an end.

It is very important that the morphological characters of the nucleus in such a case be noted. If wet-fixed preparations are made and stained with haematoxylin, it may be noted that slightly different pictures may be obtained by using different fixatives and different modifications of haematoxylin. For example, if Schaudinn's fluid is used, and iron haematoxylin, or iron haematein, the picture is on the whole like that figured by Werner (2) for **E. histolytica.**

The centriole is small and stains faintly, and the peripheral chromatin, while present, is often not pronounced in amount nor in intensity of staining. The karyosome may be invisible or appear as a very faint cloudy ring.

If Zenker's or Flemming's solution be used instead, and Mallory's phosphotungstic acid haematoxylin be used, a slightly different picture is obtained—for in the latter case the centriole is more densely stained—there frequently appears to be more peripheral chromatin often in round granules and staining intensely; the karyosome, while faint, is usually very definitely stained. A constant technique, therefore, must be used when comparing preparations from various sources for diagnosis or study. The writer recommends fixation in Zenker's fluid, diluted one-fourth or one-eighth, or in Flemming's solution, staining in phosphotungstic haematoxylin and differentiating with weak potassium permanganate solution.

If one encounters a return case of entamoebic dysentery, or a prolonged untreated case, one may find associated with, or instead of the large trophozoites, described above, a generation of trophozoites usually smaller in size. These may be found in typical dysenteric stools with blood and mucus, or in stools containing bloody scybala, in diarrheal stools, or rarely even in well-formed stools. There are several varieties of this "small generation." As seen in stools, they are frequently, though not always refractile. When refractile, they stain very slowly intravitam with gentian violet, and have no doubt often been mistaken for **E. coli.** When stained by the method mentioned above, one is struck by two features, which characterize the smaller senile, or precyst generation. First, the presence of more or less large blocks of crystalloidal substance (Chatton, 3) in the cytoplasm. Second, the very prominent and densely stained karyosome. This generation of trophozoites is the one that precedes encystment. It is also, I believe, the generation described so carefully by Elmassian as **E. minuta** (4), and the generation described by others as **E. tetragena** (5). Between this generation and that of the large trophozoite there are varieties so far as the amount and shape of chromidia and staining character of the karyosome are concerned.

In some of these cases of entamoebic colitis, associated with the small or precyst generation, are small cysts containing one, two, or four nuclei, and blocks of chromidia. Later, when the colitis has apparently entirely disappeared, and the stools have become more or less formed without a trace of mucus, it may be possible to find few or many tetragena cysts, thus completing the life cycle of **E. tetragena** in the intestinal tract of man; and it may be conceived that of the three phases mentioned (a) the dysenteric trophozoite, (b) the precyst trophozoite and (c) the cyst; (a) represents something analogous to adolescence and (b) to maturity or senility

It can be shown that these terms represent corresponding infecting powers of the trophozoites in any given case of entamoebic colitis. For, if

1. Proceedings Fifteenth International Congress of Hygiene and Demography, 1912; Archives Internal Medicine, Chicago, 1913, xi, Jan. 15.

2. Beiheft, II Archiv. f. Schiffs u. Tropenkrankheiten, 1908.

3. Chatton, Bull. de Soc. Path. Ext. V, 180, 1912.

4. Elmassian, Centralbl f. Bakt. Parasitenk u. Infek. Ersts Abt. Orig. LII, 335, 1909.

5. Craig, Jour. of Med. Research, XXXVI 1, 1912.

kittens be inoculated rectally with material from an adolescent or "histolytica"-like strain, the strain may be carried on upon the death of the preceding kitten for four, five or six transfers, the strain thus taking about one month for its sojourn in the colon of the kitten; but if, on the other hand, a chromidia containing senile "tetragena"-like strain be injected rectally into kittens, it cannot be carried through more than one or two transfers. Indeed, it may perish in the first kittens inoculated. In other words, it soon fails to infect the kitten, just as the rectal injection of kittens with tetragena cysts fails to infect them. It is reasonable to suppose that strains intermediate in age between adolescence and senility will yield upon inoculation a number of removes corresponding to the age of the strain. Werner (6) has noted the failure of some strains either to infect, or to be carried on in kittens for more than one or two removes.

What happens to the senile strain in the colon of the kitten when it has, so to speak, run its course? It encysts.

The colon of a kitten (weight 500 to 700 grammes), particularly the caecum, approaches as nearly as we can at present to a culture tube for **E. tetragena**, and in the large bowel of kittens developmental changes in the trophozoites may be observed to make their appearance very much as they do in an untreated case of dysentery in man, but with this difference. On account of the shorter duration of the disease in kittens, and the fatal issue, it is necessary to transplant the culture to another kitten when the host is dying, or very soon after death. In this way only can the age of adolescent strains be prolonged and the appearances of maturity observed. By this means it is possible to start with an adolescent strain having histolytica-like characteristics, and through the successive removes note the reduction in size of the trophozoite, the appearance of chromidial blocks in the cytoplasm and the prominent karyosome and centriole in the nucleus. In other words, note the transformation of a histolytica-like trophozoite into a senile tetragena-like trophozoite. In the last remove, it may be possible to detect cysts in the material containing the precyst generation.

If then in any case of entamoebic dysentery there may be doubt of disagreement as to the identity of the trophozoites in question, and as it is of course inadvisable to withhold treatment from the patient for the study of the entamoebae, it is recommended that rectal injection of fresh material containing trophozoites be made into kittens, and wet-fixed stained preparations of the trophozoite from remove to remove be made, to note whether they correspond with **E. tetragena** or other form. If the entamoeba is **E. tetragena** the phases outlined above will be seen. In some of the preparations from the last remove pathological forms of the trophozoites may be encountered. These apparently are identical with the budding and other forms described by Schaudinn and Craig and figured by Craig and Hartmann.

The peculiar pathological changes to be noted in the trophozoites are as follows:

1. The appearance of buds of different sizes on the periphery of the trophozoites in question. These buds of the ectoplasm are sometimes clear and homogeneous and sometimes contain masses of chromidia. Not infrequently a bud contains the nucleus.

2. The extrusion of chromidia, nuclei and portions of cytoplasm. Dislocation of the nucleus, it taking up an extreme peripheral position in the cytoplasm, or attached by a slim pedicle and frequently appears to be stuck on to the peripery. Globular portions of the cytoplasm (buds) are extruded.

The staining qualities of the nucleus in these forms are always less sharp than in normal trophozoites and cysts nearby.

If the entamoeba is **E. coli** trophozoites may be found vegetating in the caecum or other part of the large bowel, and can be differentiated from **E. tetragena.**

The writer believes that cases thought to be "histolytica" dysentery will resolve themselves into infections by **E. tetragena.**

6. Werner, loc. cit.

SCHOOLS FOR FEEBLE-MINDED THE STATE'S BEST INSURANCE POLICY.*

By Ira M. Hardy, M.D.,
Superintendent of the North Carolina School for the Feeble-Minded, Kinston, N. C.

In addressing you on the custodial care, humane treatment and scientific training of the feeble-minded, and arguing that specifically designed institutions for carrying out these laudable purposes are the best insurance policies in which the State can invest, I believe are such self-evident truths

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that they should need no other demonstration than that involved in the effective work which they perform for the unfortunate and irresponsible and in the general uplift of society and the wholesome regeneration which accrues through them to the State in the prevention and lessening of pauperism, degeneracy and crime.

Feeble-mindedness is a very general and comprehensive term, applicable in a general way to most of the shortcomings of private and public life, as illustrated in misgovernment of the State, the community and the family, and as exemplified in the diseased, the dependent, the degenerate and the criminal life of a very considerable portion of mankind. Taking the term in its broadest signification, it includes almost every phase of human life from simple aberrant mentality through the various grades of neurasthenia, hysteria, epilepsy and idiocy up to clearly defined mania. All these various degrees of abnormality have their low, medium and high grades of development, with delicate pivotal balances alternating between under and upper normality, so that it is oftentimes difficult to distinguish the man or the woman who is sound mentally from the unsound.

The tests which are made to determine the insane, established by alienists and scientific specialists, medical or otherwise, are of so searching and sweeping a character that few so-called normal people could undergo the ordeal without in some degree being regarded as abnormal. However, we all know that the normalities of mankind far exceed their abnormalities, many of which have probably not so much to do with heredity as with their acquirement after birth through accident, disease, isolation and environment. But to whatever cause due, we have feeble-mindedness all the same, with direct and indirect tendencies toward its alarming increase. It is not that it so much affects the individual and the family, but that it permeates the community, the State and the race. All these are so closely interwoven that what affects the one concerns the whole, whether for well or ill being.

According to my view of the subject, based on observation and experience, there are many degrees of feeble-mindedness before idiocy or incipient insanity is reached which could be either prevented, modified or arrested altogether before the opportunity is offered it to develop more serious and dangerous symptoms.

The first step in the policy of the prevention and mitigation of dependency, degeneracy and crime is to provide adequate institutions of the kind outlined to receive the unfortunate persons who are so urgently in need of permanent care. And also that, if taken at the proper age, feeble-minded children can be wonderfully improved. Indeed, it is said that if care for this class of feeble-minded unfortunates were had adequately for a generation "the expenditures for prisons, reformatories, asylums, hospitals, alms houses, police and fire losses would be enormously reduced, or what is even better, expenditures for such purposes would be accomplishing desirable tasks which we have as yet not the courage to undertake." The part the people and the State can take in conserving these human strains is hardly realized. We may say that the hereditarily defective child should never have been born, yet he cannot be put out of existence, but should be cared for, developed and trained at least to the extent of being in a measure self-supporting and harmless to society. In order to accomplish this with the least expense to the State, and with the best advantage to himself and to the community in which he resides, he should be taken charge of in his earlier years, which are the ones of his greatest receptivity.

Dr. Henry H. Goddard, who takes front rank among the highest authorities in the world on feeble-mindedness, and especially on the custodial care and training of such unfortunates, says: "It should be manual training first, last and all the time—training that is adapted to the child's special ability, making him happy, contented and useful."

This, I believe, will solve the problem of feeble-mindedness so far as it is capable of solution. We have now in America, as well as in Europe, large colonies where groups of these defectives live as nearly a normal life as it is possible for them to live. It is stated that they do the work on the farm, plant the crops, care for them and gather them. In fact, they do all the routine work of the old-fashioned farm, but always under the supervision and direction of expert farmers who are able to utilize their abilities to the greatest advantage. "They are perfectly content, and no one visits these institutions and studies the conditions without feeling that here is the true solution of one of the greatest social problems that is now facing our advanced civilization."

To illustrate this more fully I have before me the annual report for 1910 of Dr. Walter F. Fernald, superintendent of the Massachusetts School for the Feeble-Minded, at Waltham. This institution is a model one of the kind and accommodates nearly 1,400 mentally and physically defective persons. Its good work speaks for itself in the

fact that the boys take lively interest and pleasure in farm and garden work. They do all the cultivating and harvesting—all the sowing and nearly all the hoeing. Other boys assist the baker, carpenter, blacksmith and engineer. The shoes of the nearly 1,400 inmates are kept in repair by the boys. The boys also do all the printing of stationery, blanks, circulars, etc., for the school. They furthermore do much of the housework in the building where they live, and also serve as errand boys.

The girls are kept just as busy as the boys. In the laundry they wash, iron and fold clothes. They do much of the darning, mending and sewing for the large household. Much of the children's clothing is made in the sewing room by the girls. Every girl at all bright is expected to keep her clothing in repair. They are also taught to wash windows, polish floors, sweep, dust and to make beds, etc. In the domestic science classes the girls receive accurate instructions in ordinary housework: how to build a fire in the kitchen range, to brush the stove, to wash dishes, to properly boil, fry, stew, or bake potatoes, to prepare other vegetables, to cook pork, beef and fish in the various ways, to make bread, biscuit and even cake, to lay a table, and to properly serve a meal. Some of the more advanced classes can cook an entire dinner. All this work is applied in the direct economy of the school. The pupils who do the best work in the class rooms are promoted to apply their acquired skill in the various kitchens and dining rooms, to their great pride and satisfaction.

Some of the girls have developed a good deal of skill in cooking. Nearly all of them have ceased to regard kitchen work as drudgery; they take a pride in it. The older girls and women are of great assistance in the care of the feeble and helpless children. The instinctive feminine love for children is relatively quite as marked with them as with normal women. A newly admitted child is eagerly adopted by some one. The affection and solicitude shown for "my baby" are often quite touching. This responsibility, it is said, helps wonderfully in keeping the uneasy class of girls contented. Without this cheerfully given attention the large number of children could not be well cared for without a considerable increase in the number of paid attendants.

"The playgrounds are equipped with swings, hammocks, tilting-boards, sand-gardens, croquet sets, etc., and each group of children spends part of every day in the playgrounds accompanied by an attendant who directs and assists in their games and sports. In the living room of each group is a liberal supply of bright-colored building blocks, picture books and playthings of every sort. Each little girl has a doll of her own and each little boy a sled, wagon or cart. These toys are always accessible, and the children are encouraged to use them as much as possible. The playthings are not provided as luxuries, but as necessities if the institution wants its defectives to approach the normal."

Indeed, it is said that to acquire alert minds children must be alert. The young child can be alert only as his play instinct is aroused. Shut out the play instinct and you stunt the growth. Neglect to draw it out and you lessen the possibilities for strength. At least once a week during the year some evening entertainment is provided for the children, consisting of concerts, masquerade balls, minstrel shows, dramatic performances, stereopticon exhibitions, moving picture shows, etc. "These entertainments are gotten up by the officers and employes of the school, usually assisted by some of the children. The moving pictures especially are greatly enjoyed by the children, and give them much real knowledge of the outside world. The most effective means of discipline or sometimes for a misdemeanor or waywardness, is to send the child to bed while its fellows are enjoying one of these entertainments. This is more effective than corporal punishment, which is not allowed. Each Sunday services are held in the assembly hall and consist of singing, Bible stories, simple illustrations and practical application of the fundamental principles of morals and religion."

In the foregoing I have endeavored to outline the most salient features of a properly constituted and conducted institution for the feeble-minded, particularly as it relates to the care, treatment and training of its inmates.

Turning attention to some of the general details in vogue in institutions designed for the feeble-minded I find that object teaching, in the broadest sense, is one of the prominent features of instruction. Objects, models, charts and other apparatus are employed for practical illustrations. There are, however, other important features connected with such an institution, in addition to its experienced and skilled medical officers and the specialized staff, including field workers and trained attendants. Among these is a school library for the teachers, especially one of standard publications on kindergarten and primary work, object teaching, physical and manual training. There is also a laboratory, dispensary and

clinic, etc. It may be well in this connection to explain that field work includes research of family stock, to record environment and parentage of the pupil admitted or about to be admitted; also the number of feeble-minded in the homes and at large, their condition, origin and history back at least through several generations. This research work, in connection with the studies in the laboratory along approved methods of psychology, anthropology and clinical pathology, enable the institution to trace the individual defective from his stock origin through his individual reactions to institutional life in all its training features of mind and body, noting the modifying influence of such care and training on his growth and development.

According to the most experienced and skilled specialists on feeble-mindedness, no one dares to say that there are not borderland grades of mental defects that may not be conserved to the normal if placed under an ideal life of training and treatment. This class is by no means small, but in addition there is another class of defective children which should be given the benefit of the doubt that backwardness does not always spell mental defect. To this slight borderland—"the twilight of the normal child mind"—the trained pedagogue, psychologist, alienist and internist may well afford to devote their energies, not alone for the advantage of this class of backward children, but for "the enormous flood of light such study will throw upon normal yet aberrant types of neurotic childhood."

To sum the matter up, institutions for the feeble-minded stand for the individualization of teaching and efforts at industrial and service training according to the scientific system evolved for the development of mental deficients. This system is over a hundred years old in Europe, but it is in its infancy in the United States. However, the progress already made in this direction by some of the more advanced Northern and Western States of the Union is unparalleled even in Europe. The whole question of the causes of feeble-mindedness needs a thoroughly detailed study from all standpoints. Happily, now that State care and segregation of mental defectives is in the ascendancy of sociological progress, we may look forward to the ages to come when these ills will have been so well prevented that there will be no need for them or for dependent, custodial or penal institutions.

This leads me to the consideration of the subject of marriage. Can it not be said, "Fools rush in where angels fear to tread?" There ought to be a uniform marriage law, intelligently enforced, which would be of great value in regard to the propagation of normal children. It is an acknowledged fact that law to be effective must follow public sentiment, not precede it, and that which should relate to the uniformity of marriage should be determined by the broadest and most intelligent opinion in advance of the creation of a law governing the same. Fortunately, we are awakening to the need of perpetuating normal and healthy human strains. More than this, we are recognizing the possibility of still further improving these strains. The right to be well-born has been denied to many. Society can redeem this injustice only in part, and for that reason the very best that intelligence and science can give is imperative in concerting measures in the behalf of the ill-born. To the large and fortunate majority who have been well-born education and a higher social conscience must not only teach real improvement, but also to use it in behalf of their less fortunate brothers and sisters.

Graham Taylor graphically expresses the importance of this religion of the future, the great sociological movement for the benefit of the race and country in general, when he says: "Religion and society, the church and the community, have values to exchange. Though not identified in aim and method, the church and the community cannot be separated. Reciprocity is more and more sought after. The church needs the social spirit and method of the best work for the community. The social work no less needs the spiritual ideals and sanctions which religious consciousness only can bring to any and every kind of service. The common ground upon which this religious consciousness in social work and the social consciousness in religious work are now being born anew. In the process work for the individual becomes no less indispensable, but all the more effective, and work for the community becomes less socialized for being more personal and human." Both religion and society are beginning to realize more fully than ever that there is no greater danger to the neighborhood than the presence in it of mentally defective youth ready at any time to indulge their uncontrolled impulses. And there is no burden that will bear more heavily on charitable or correctional institutions in the future than that of the feeble-minded offspring of feeble-minded delinquents and dependents. But aside from the fact that as such grow older and as the bad habits which they so early form become fastened on them and the further fact that most of them are sure to have descendants even more

feeble-minded than themselves, there is also a grave danger of normal children being led into immoral habits by companions who are not mentally responsible for their acts or for the indulgence of their uncontrolled impulses, which often lead to harlotry and crime. That such defectives ought to be early segregated so that they cannot propagate their kind, nor prey upon the community at large, cannot be gainsaid. "That segregation costs money is admitted, but that it saves money in the end is often forgotten. The initial cost of segregation or colonization is doubtless great, but the saving by counteracting our present lax methods would be far greater. As tax-bills are not itemized the ordinary citizen does not realize that he is at present paying for the unrestrained presence of the feeble-minded. An added tax for their segregation would be an apparent, rather than a real, increase, for through segregation of defectives the number of criminals, the number of prisoners, the cost of court trials, the demand upon private and public charity would be largely decreased."

Of the class of drunken sots that make many of our problems in intemperance, a very large number of them are feeble-minded. Aside from any natural or acquired mental and physical defects, it is a disease in itself, and never fastens itself permanently upon either man or woman unless he or she has fallen below par mentally. If this abnormality was confined only to the victims themselves its effects would probably not be so lasting upon the community, but it is its visitations upon the unborn generations which make intemperance so abhorrent to all moral and right-thinking people. The same may also be remarked about prostitution, the largest percentage of the unfortunate victims of which are girls and women of varying degrees of feeble-mindedness. In this connection a prominent medical authority observes: "Let the public, young and old, be taught that seduction, one of the primary causes of the social evil, essentially in most instances, is due either to deplorable ignorance on the part of the man or the feeble-mindedness on the part of the maid. Its inevitable toll is physical and moral degeneration. It is fostered by mental and moral degeneracy, environment, starvation wages of feminine toilers and extravagance. Let us come out in the open and fearlessly teach the plain people the home truths about this largely preventable evil." Socially let us put man on an equality with woman, for when there is a fallen woman let us remember there is also a fallen man. Indeed, there are ten pure women to one pure man.

The old saying that "an ounce of prevention is worth a pound of cure" is as true of preventing the ills to which human flesh is heir as it is of many other circumstances which concern human existence. Prevention is the best, but if that has not been used, or has failed to be effective, then comes the next best thing to it, which is exemplified in the pithy adage of "a stitch in time saves nine."

Both these old saws are the quintessence of human philosophy, and illustrate the best kind of insurance on the part of the individual, the community and the State. This cannot be well gainsaid, for when practically carried out it conserves human life and human affairs in the most effective form—improves morality, anchors Christianity more firmly, increases the general well-being, and saves the State the commission of needless wrongs and the people of much avoidable expense, besides thousands of heartaches.

Insurance of the nature and character that I have outlined is the best of all, for it creates more demand for all other kinds. It represents no accident or loss account, but gain to all concerned. Its premiums are payable in manhood and womanhood regained, and its principal is invested in rehabilitated childhood, placed on the plane of normality and health. No one unfamiliar with the subject can estimate the incalculable good which such insurance will effect when used to found, to organize and to operate specific institutions for the elevation of misguided, unfortunate, degenerate, irresponsible and helpless humanity.

Thus it will be seen that the feeble-minded institution is the very best insurance in which the State can invest, for it deals with the under stratum of the social structure for its amelioration and regeneration, working it upward to a higher plane of existence and development, and lessens pauperism, degeneracy and crime.

The latter are the great bete-noir of all well-regulated communities, and give rise to the endless perplexities in the government of States.

In our sociological work we believe in beginning with the child, and through it reaching the parents and the home, and through the latter the various ramifications of the community, ultimately reaching the State, which is but simply an entity of the delegated powers of aggregated communities of the people. Sometimes forgetting its subserviency to the latter in its various branches, it is the cause of many social and political ills from which the people needlessly suffer. Its poor-houses, reformatory institutions, asylums for the variously afflicted, penitentiaries and chain gangs

get their recruits from the feeble-minded—all these things taken together, with the crude, imperfect and oftentimes corrupt legislation, and the strained technical interpretations of the law by our courts have tended somewhat to the increase of pauperism, degeneracy and crime rather than to their prevention or abatement. This, in conjunction with the many avoidable ills of childhood, motherhood and womanhood generally, have engrossed the minds and aroused the sympathies of humanitarians and publicists everywhere to the extent of making sociological action imperative.

In all these sociological upheavals, or rather in the sociological progress being made on all sides and in all directions, none have been more marked of late than that which concerns the care, treatment and training of the feeble-minded.

As we all know, or at least ought to know, the latter, as a class, have dull perceptions, feeble power of attention, weak will power, uncertain memory and defective judgment. It has been clearly demonstrated that to attempt to arouse these dormant faculties by forcing upon them the abstract truths of ready-made knowledge is utterly futile. The teaching must be direct, simple and practical. The feeble-minded child must be made to do, to see, to touch, to observe, to remember and to think. These faculties must be utilized to the fullest extent, and according to authorative opinion the varied and attractive occupations and busy work which are so important a part of the modern graphic methods of education for normal children must be utilized for sub-normal children.

This is only one part—although a most vital one—of the great sociological work involved in the uplifting of the child, the woman and the man of abnormal characteristics, and through this means forming the more perfect State and the best form of government for the people. All these efforts, though radical and far-fetched as some of them may appear to unthinking eyes and ears, are nevertheless movements toward the final good and betterment of human kind. They can never go backward, but must ever move onward, irrespective of illiterate conservatism, untenable prejudice, illogical expediency and the selfish interests of entrenched power for wrongdoing. All these things show that the world—the common people who make it, who do things, and who are trying to keep it moving along in fairly right channels—are awakening more fully to the urgent demand for reformation, compensation and retribution, not only for the benefit of existing generations, but for those who are still unborn.

ON THE PRODUCTION OF A BERIBERIFORM POLYNEURITIS IN FOWLS WITH SUBSTANCES OTHER THAN RICE.*

By Creighton Wellman, M. D.,
Professor and Head of the Department of Tropical Medicine, Hygiene and Preventive Medicine; Director of the Laboratories of Hygiene and Tropical Medicine, Medical Department, Tulane University of Louisiana; Visiting Physician to the Charity Hospital, New Orleans.

(Studies from the Laboratories of Tropical Medicine and Hygiene under the direction of Creighton Wellman, Medical Department, Tulane University of Louisiana—No. 25.)

The large literature on the etiology of beriberi is chiefly concerned with the experimental work done by various authors through feeding milled rice to fowls. Such feeding results in the production of a polyneuritis which in many respects simulates beriberi, and it has been quite generally accepted on the strength of these experiments that this experimental polyneuritis is identical with beriberi.

In the words of Chamberlain and Vedder at the last biennial congress of the Far Eastern Association of Tropical Medicine, the prevailing opinion seems to be that "polyneuritis in fowls and beriberi in man are practically identical diseases. The etiology of the two diseases is the same, viz., polished rice." This view met with few opponents at the recent International Congress of Hygiene and Demography.

The writer, while not ready to state that this view is entirely or even in a large degree incorrect, is, however, of the opinion, in view of his own researches, that other factors than polished or milled rice must be admitted in discussing the etiology of beriberi and also of **Polyneuritis gallinarum.**

My own work on this subject may be briefly summarized as follows:

Before I took up the problem experimentally Professor Bass, of the Tulane Department of Tropical Medicine, had, in a series of experiments during 1911, shown that the characteristic polyneuriits of fowls could be produced by feeding an exclusive diet of milled Louisiana white rice. During his subsequent absence in Central America, I carried on another series of experiments and observed that not only milled Louisi-

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BERIBERIFORM POLYNEURITIS IN FOWLS.

Figs. 1—2 caused by an exclusive diet of cane sugar.
Figs. 3—5 caused by an exclusive diet of corn starch.
Figs. 6—9 caused by adding small amounts of oxalic acid to a mixed diet.

ana rice (both polished and unpolished) will produce this condition, but also that a single diet of other carbohydrates will accomplish precisely the same result. For instance, I was able to produce this characteristic condition in fowls more rapidly and completely with cane sugar than with milled rice. Pure corn starch will produce the condition rather more slowly, but fully as completely as milled rice. I also found that a mixed diet plus small doses of oxalic acid will produce a condition indistinguishable from that caused by milled rice. And finally, like other observers, I produced the condition by semi-starvation. These experiments were in each instance checked by controls.

The production of a beriberiform neuritis in fowls by other substances than milled rice is, so far as I know, a new observation and suggests a revision of the accepted views regarding rice as the sole cause of beriberi in man. It is my opinion that the question is as yet far from being finally settled. I, years ago, made the statement that in West Africa and its adjacent islands the geographical distribution of beriberi and rice eating did not coincide. The same statement is true of the American tropics. In view of my observations it is entirely possible that the excessive use of Cassava starch in Brazil and (as pointed out to me by Professor Matas) the inordinate drinking of cane juice by negroes in the Antilles during the sugar season may have something to do with the outbreaks of beriberi which are reported from these countries.

These are questions of great scientific and economic importance and the New Orleans Board of Trade has asked the Tulane School of Tropical Medicine to take up further researches with the view of providing a thorough investigation of the subject from this new standpoint suggested by my recent experiments, and has set aside a fund sufficient to finance such an investigation.

It is, therefore, our purpose to carry on further experiments bearing on the problem touched upon in this paper, and the results of these will be published on a future occasion.

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SOME PROBLEMS IN INFANT NUTRITION*

By Dr. Clarence A. Rhodes,

Physician-in-Chief to the Wesley House Free Clinic for Children, Physician-in-Chief to the Florence Home for Children, Pediatrist to the Moore Memorial Church Free Clinic, and Attending Physician to the Wesley Memorial Hospital,

Atlanta, Ga.

It has long been assumed by the profession that the gastrointestinal functions in infants are imperfectly developed, and on this assumption we have based many of our procedures in infant feeding.

However, in recent years our views on this subject are constantly changing and recent investigation into the functions of the gastrointestinal tract of infants is making the physiology of their digestion much clearer than formerly.

I wish to call your attention to some of the

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work that has been done and the functions proven by the numerous investigators in this fertile field. We are indebted to Pawlow for calling our attention to the two kinds of gastric secretion: (1) psychic; (2) chemical.

Psychic secretion is first and is initiated by stimuli passing by one or more of the five senses, impinging on the brain and reflected thence by way of the secretory nerves to the secretory glands or originating in the brain in association of ideas or imagination giving rise to appetite. The chemical stimuli arise from the food within the stomach, not by contact, but through the chemical properties of their solutions.

Let us begin with the infant in the act of sucking which initiates the secretion and follow the chain of secretions through the intestinal canal.

First, we come in contact with the saliva; the salivary glands have been demonstrated to be active in the newborn, and the saliva capable of converting starch into sugar.

The lab-ferment, or rennin, exists in the stomach as a prochymosin and is converted into active rennin by the HCL. Pepsinogen, the mother substance of pepsin, is formed by the cells to be activated by the HCL. HCL and free HCL is found in the newborn. Free HCL appears in the breast fed infants one and a quarter to two hours after feeding. In artificially fed infants it appears later, in two to two and a half hours.

Lipase, capable of splitting neutral fat into fatty acids and glycerine, has been found in the newborn as early as the second week and in greater quantities than in the adult.

Secretin, first described by Starling and placed by him in a group of bodies having kindred functions, which he named "hormones." Prosecretin, the mother substance of secretin, is present in the mucous membrane of the duodenum and is converted into secretin by the action of the HCL of the gastric juice; the secretin is then absorbed into the blood, carried by it to the pancreas, which it incites to activity.

The ferments of the pancreatic juice, tryptic, diastatic, and lyptic have been demonstrated in the infant. Trypsin exists in the secretion as a proferment, trypsinogen, and is activated by the enterokinase in the intestinal canal, the latter a ferment derived from the mucous membranes of the intestines, which is called into play by the action of the pancreatic juice.

The function of the trypsin is to form albumoses and peptones from proteids and to split these and those derived from gastric digestion into amido-acids.

Lipase, or steapsin, exists in the pancreatic juice as a zymogen and is activated by a constituent of bile. This activating substance of lipase has not as yet been proven in infants.

The amylolyptic ferment of the pancreas, diastase or ptyalin, is identical in its action with ptylalin of the saliva and for which no proferment seems to exist. It is present in infants and breaks down starches through dextrins to maltose. The maltose is further changed by another ferment maltase into glucose, and this latter has been demonstrated in infants. The activity of both glycogenic and urea forming functions have been demonstrated in the livers of infants.

The important ferment erepsin, extracted from the mucous membrane of the small intestines by Cohnheim is present in the infant. Its function is to break down the peptones and albumoses completely into amido-acids. It does not act upon native proteids, except upon casein and that slowly, but completes the action of the proteolytic ferments of the stomach and pancreas.

There is another series of ferments, among which is lactase. This ferment splits milk sugar into glucose and galactose and exists in the intestinal juices of the infant. It disappears when milk as a food is stopped and reappears when milk is later adopted as a diet, thus illustrating the principle of the adaptability of ferments to foods. Invertin, which splits cane sugar into glucose and fruit sugar, has been demonstrated in the infant. Nuclease, splitting nucleinic acid, a lipase and arginase are also of this group.

Thus we see that the statement of Czerny and Keller is true that all of the ferments of the intestinal canal are present in infants, and there exists the power even in early life to break down starches, milk sugar, cane sugar and maltose as claimed by Uffenheimer.

In the past we have been much concerned about the role played by the proteids, then the fats were later blamed, and more recently with the new views of Finkelstein, the carbohydrates were the culprits, and at the present much attention is given to the part played by the salts. But beyond these things we get a glimpse of some subtler factor at work, which makes us realize that our present efforts to adopt a foreign milk to the infant's digestion and assimilation is gross and clumsy.

Schwartz's investigations into the physical condition of the fats are of interest. He points out a great difference between cow's and mother's milk when viewed under the microscope. In cow's milk the fat globules are, for the most part, rolled

together in heaps or clumps, only a few moving about singly or in pairs. In mother's milk this clumping failed entirely and there was a regularly divided field of fat globules. He also noticed that when cow's milk was sterilized the division of the fat globules was a more regular one, the clump formation being smaller, and that the clumps did not roll together as in raw milk. Another interesting feature he also brought out was that the fat globules were surrounded by a zone of clearer substance, which he called periglobular substance, which in cow's milk has a certain stickiness or viscosity that is absent in mother's milk. A still more interesting fact was the difference in elasticity of the periglobular substance, which in cow's milk is easily overcome by the mere laying on of the cover glass on the slide, thus causing the flowing together of adjacent globules. This does not hold true in mother's milk, in which the elasticity is very great. The heating of cow's milk increases the elasticity of the periglobular substance and may account for the easier handling of such milk by some infants. Schwartz believes that the elasticity of raw cow's milk is so slight that the mere act of sucking from the bottle, by the pressure it exerts, impairs the emulsification.

The studies of Alexander and Bullowa on the protective action of colloid of milk are of great practical interest, in that it gives a scientific explantation of a fact which empiricism taught us long ago, viz., that the addition of a cereal gruel makes cow's milk more easily digested by preventing the curds from becoming tough and leathery in the stomach.

The coagulation of milk begins within two or three minutes after it reaches the stomach, and is completed in ten minutes; the process of separation of the fluids from the solids allows the whey to pass on into the duodenum, leaving the curd behind. In this way the milk sugar is the first to leave the stomach, while the casein and fat remain. Now the fundus of the stomach closes down upon the curd, bringing the mucous membrane into contact with the food; the gastric juice acts first upon the periphery of the curd and as this goes into solution the fundus follows down upon the remaining mass. The curd in the case of mother's milk is completely in solution at the end of one and a half to two hours, while in the case of cow's milk it requires about three hours. This difference in the time of digestion required for the two milks has an important bearing on the frequency of feeding. We are here shown the fallacy of feeding cow's milk every two hours as has been our custom.

Czerny and Keller have called attention to the fact that a breast-fed child left to its own inclinations feeds five or six times a day, rarely seven. It is easily seen that feeding every two hours the stomach gets no rest, and since milk coagulates in layers like an onion, the first layer being digested first, then the second and so on, it will be seen that the center may remain untouched by the gastric juice indefinitely. This nucleus at body temperature furnishes a most excellent culture medium for bacteria, and it has been shown that milk having a bacterial count of 10,000 per c.c when fresh, afforded from the nucleus of the curd kept undigested in the stomach by too frequent feeding, after nine and one-half hours, a count of 16,500,000. Moreover, irritating volatile fatty acids are produced by the action of these bacteria.

There may be differences in the casein of cow's and woman's milk, but they have not as yet been definitely determined. The ability of the infant's digestion to handle cow's casein has been investigated by various investigators. Langstein demonstrated that the stomach contents of infants show about the same amounts of peptones and albumoses after cow's milk and after woman's milk. Also Orgler, examining the stools of various infants who had been fed on cow's milk which contains much nitrogen, and woman's milk which contains very little, found the nitrogen in the stools of both feedings the same. Meyer gave sick children woman's whey plus cow's casein and fat, on which they thrived; on the other hand, he gave them cow's whey plus woman's casein and fat on which they failed to thrive, from this he deduced that cow's casein cannot be the injurious factor in artificial feeding.

It is reported from Finkelstein's clinic, where the effects of feeding of casein has been carefully observed, that neither rise of temperature, dyspeptic stools nor other untoward results have been seen after feeding casein and further that it was often possible to cure mild cases of digestive disturbances by giving large amounts of casein, and, finally that even the severest disturbances in nutrition, in "intoxication," large doses of casein were given without any bad effects. This more than justifies Czerny and Keller in saying that it is true that in the intestines of the healthy infant under the influences of the different digestive juices, cow's casein finds as favorable conditions for solution and absorption as woman's casein, and that both are almost completely broken down, and that under normal con-

ditions at the most an insignificant residue escapes absorption.

Biedert has fathered the contention that the curds in the stools of infants are casein because of their gross appearance, also because they give the Mellon and biuret reaction, and also because of their nitrogen content. On further investigation it was found that no such conclusions are warrantable on the gross appearance of the curds, and that the proteid and nitrogen content are derived from the digestive juices and from the desquamated epithelium.

The curds are really due to fats, fatty acids, bacteria and epithelium. The fact that the nitrogen content of the food and of the stools have no relation to each other argues against the curd as undigested casein. These curds, too, appear when the infants are on large amounts of sugar and also when fed on whey, which contains no casein or fats.

The appearance of these so-called "casein curds" does not point to a proteid indigestion. This new conception of the curd is of great importance, as it stays our constant interference with the casein of our formulas in the effort to get rid of the curds from the stools, and directs our attention to the two substances of food disturbances, the fats and sugars.

Freund has pointed out the importance of a careful study of the fats. It is well known that, while a breast-fed infant thrives on a greater per cent of fat than at any other period of life, an artificial-fed infant rarely stands such amounts and a sick child can be seriously damaged by the smallest quantities of fat.

The quantities to be given at a single feeding is of importance, as the figures usually found in the text-books for gastric capacity are based on anatomic measurements and do not represent the physiologic capacity; that is, the amount of milk an infant can take care of at a single feeding. This amount is greater than the anatomical measurements would seem to warrant. The explanation for this is the separation, during the meal, of the solid from the fluid portion of the milk and the passage of the latter into the duodenum which begins at once.

The physiologic capacity in the first and second months has been shown to be about 25 per cent more than the anatomic capacity, in the third month between 20 and 25 per cent more, in the fourth month between 15 and 20 per cent more, and in the fifth month about 20 per cent more.

Thus we see the advisability of feeding larger quantities at less frequent intervals as Czerny and Keller have pointed out, and they fix upon five meals a day as the optimum, at four-hour intervals; four meals in the day and one at night, for both breast and artificially-fed infants. From my own limited experience I can heartily recommend this procedure. If the infant must be artificially fed let it be put on pure cow's milk. The great sin of artificial feeding in this country today is the ignorance of the proper use of pure cow's milk and the ready acceptance of the proprietary foods as substitutes.

The last two decades have seen the rise of modified milk. It has served the useful purpose of demanding a more intelligent supervision of what is given the infant; it has permitted us to appreciate more fully what constituents of the food are at fault when the food disagrees; but it has come far from solving the problem of infant feeding. It has been a step in the evolution of the science of infant feeding, but not the final step. If cow's milk is to be used, let its use be reduced to a simplicity, so that the man who gives only an average amount of attention to infant feeding will not be burdened with a large mass of percentage data.

I believe that the vast majority of infants can be successfully fed on simple dilutions of pure whole milk; and the sooner we reduce infant feeding to its simplest form, the greater will be the success in this field of medical science.

TUBAL OR EXTRA-UTERINE PREGNANCY.*

By J. Hugh Carter, M.D.,
Memphis, Tenn.

There are but few subjects in the whole range of medicine that excite more interest, both to the general practitioner of medicine and the surgeon, as tubal or extra-uterine pregnancy.

Of all the phenomena or mysterious processes of life the most mysterious is that an ovum becomes impregnated and develops into a living child other than its normal development. Therefore, this extraordinary phenomena is great and becomes more so by the fateful possibilities of the situation as well as the dreadful outcome which may at any time determine a doubtful diagnosis and rob the poor victim of her life.

For these reasons and that nearly all cases in first stage fall into the hands of the family physician, it is therefore important that we should

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know more about the subject and be able to make a correct diagnosis, and not wait for the surgeon and proper means for their relief.

Until the past few years, tubal or extra-uterine pregnancy was thought to be extremely rare, but it is now known to occur quite frequently.

There are but few physicians who have been in practice for the past five years who have not seen or heard of a case. It has been shown that many of these cases of irregular menstruation associated with colic, tympanitis and pain on standing, which pass off without any treatment other than a purge, hot douches and rest in bed, are in reality tubal or extra-uterine pregnancy.

For these reasons, any irregularity or deviation from the normal during gestation should arouse our special attention. It may be said that tubal or extra-uterine pregnancy in its early stages belongs to the family physician, but as soon as the diagnosis is made it should be transferred to the surgeon.

After we have seen one case, the diagnosis thereafter is more quickly made. In order to make a correct diagnosis and grasp our subject properly, we must know the cause, and the course, if left alone, in tubal pregnancy.

Dr. Kelly states that extra-uterine pregnancy occurs in any one of the five places along the tube, from within outwards:

1. In ovary.
2. In the tubo-ovarine fimbra.
3. In the ampulla.
4. In the isthmial.
5. In the interstitial portion of the tube.

The most common is the ampulla, and next isthmial. The interstitial form is rare, and of the ovarine, only a few have ever been seen.

Cause—It is now thought that the spermatozoa travels up the uterine wall, enters the tube and down until it meets the ovum at or near the ovary; this by its own volition or propulsive movements, while the ovum, which is much larger, must be carried out through the different parts of the tube by other propulsive power. Therefore, anything that would have a tendency to stop or retard the movement of the ovum along its course might be said to be one of the causes of tubal pregnancy.

1. Any pelvic adhesions may bend the tubes down, or bands running across the tubes, producing a loop that would obstruct the progress of the ovum.

2. Tumors of the tubal mucosa or fibroids of the uterine cornua blocking up the isthmial portion of the tubes.

3. Tubo-ovarian cyst by causing a twist in the tube.

4. Webster states that inflammation of the tubal mucosa by which its cilia are destroyed, which are the propelling power of the ovum.

5. Diverticula in the tube sometimes stop the ovum.

6. The long, narrow, winding tubes that are found sometimes in normal women are said to be a cause.

7. Any pressure from within or from without that would cause a blocking of the calibre of the tube would be a cause.

From these facts it will be seen that not one, but many causes operate to bring about tubal pregnancy which are not confined to a woman of any particular locality, but are found wherever there are women to become pregnant.

The direct cause in any one particular case can only be determined at the operating table or pathological laboratory. Even then it is impossible in some cases.

The operating room has proven one thing, that women who have had one extra-uterine pregnancy are more liable to another, and that they rarely occur in the normal woman; that is, one that has not had some trouble or irregularity during her menstruation. Therefore, we should watch after these women very closely.

Accidents which might happen to the ovum are many. It usually always ends by violent death, caused by rupture of its sac, tubal abortion, when it slips out into the abdominal cavity.

Sometimes the ovum becomes encapsulated by hemorrhage which cuts off its nourishment, and it therefore dies. It is very rare that the foetus goes on to term. The false labor pains come on, and if the correct diagnosis is not made and the foetus not removed by abdominal section, it dies and begins to undergo degeneration or mumification, and lithopoedium formation may take place. Rupture may occur into broad ligament and peritoneal cavity.

I have seen six cases in the past few years, four of which were my own, the other two while an interne at the Memphis City Hospital. One went to full term, two to four months and the others about six weeks, all of which I shall report at the conclusion of this paperf.

Diagnosis—I might say the symptoms before and after rupture. Before us we usually have a woman that gives the history of a suspicious pregnancy; that she has not been as regular for the past two or three months with her menstruation as usual; sharp, cutting pains in the side where preg-

nancy occurs. Menstruation may come each month but scant; may pass shreds of mucus and endometrium. Very frequently there is more or less pain during intercourse, especially a soreness a day or so following, exciting menstrual flow. Increase in size of abdomen more noticeable on one side and seems to be a little higher than in normal gestation. Occasionally the woman may pass off great fragments of endometrium, thereby leading her to suspect she has aborted.

Tubal or extra-uterine pregnancy usually occurs in women that have not borne children for some time and had more or less trouble during their regular monthly sickness.

On external palpation we will find a tumor, usually situated to one side, and boggy-like to touch, and not symmetrical in shape and outline. Bimanual palpation confirms what we found above, with more or less pain caused when pressure is exerted on the tumor.

We also find the uterus somewhat enlarged, but not in proportion as it would be in uterine gestation.

After rupture, the first symptoms are pain, cutting in nature, coming on suddenly, and situated to one side, with more or less shock. Of course, this would be governed by the amount of hemorrhage following the rupture; at this time or soon after, we have a bloody discharge from uterus.

Tubal or extra-uterine pregnancy might be mistaken for appendicitis or an ordinary uterine abortion and salpingitis, but from careful study of the case, the correct diagnosis can be made.

Treatment, I might say, is surgical, but there is much that can be done while waiting for the surgeon to arrive.

If rupture has taken place into the abdominal cavity, there will be profuse hemorrhage, and we have but little time to waste. Therefore, put patient in bed, flat on back, arms and hands bandaged to shoulders and hips; ice packs over the abdomen; saline transfusion under breast (fountain syringe will do if we have nothing better), attached to aspirating needle. Also have foot of bed raised and saline by rectum, and morphine to keep the patient quiet. Adrenalin solution, 20 to 30 m. to pint of saline, is useful.

Ruptures in other parts are treated the same way, but not so heroically.

I will not go into the surgical technique, but say we should operate in all cases as soon as possible, as we never know when hemorrhage is going to take place, even if it has seemingly been stopped.

The six cases I have seen, four of which were my own, were operated on by myself, two being of about six weeks' duration, and the other two about four and one-half months. All recovered beautifully.

The other two I saw while an interne at the Memphis City Hospital, and I had the opportunity of being the assistant. One occurred at full term, the operation being done during shock. The patient died in a short time. The other one, about two months later, recovered after a long convalescence from subsequent infection.

As to just what operation should be done, I do not believe one can say until the abdomen has been opened; then do whatever the operator thinks best. In other words, each patient and the conditions found in the abdomen is a law unto itself.

In conclusion, I wish to insist upon a careful diagnosis of each case of suspected tubal pregnancy as early as possible, thereby giving the patient a much better chance of her life.

DISCUSSION.

Dr. E. Denegre Martin, New Orleans, La.—The doctor has handled the subject very thoroughly. I wish simply to call attention to a point in the management of the technic which I think of importance. I would say, however, that we are seeing more of these cases today than we did formerly—not that I believe the condition is more prevalent, but for the same reason that we are operating on other conditions—and that is that we are making the diagnoses. Whereas, the condition is not so common that every surgeon has an opportunity of operating upon these cases, we certainly hear of this much more frequently than we did some years ago.

It has been my plan, when an active hemorrhage was in progress, to open the abdomen rapidly, clamp the broad ligaments on one or both sides of rupture so as to check the hemorrhage. I believe that it is an error to transfuse these cases unless prepared to tie the bleeding vessel. The majority of these will stop bleeding of their own accord and many of them make a happy recovery without surgical interference; each case should, however, be studied for itself, and the procedure in each should be the best suited to the existing conditions.

Dr. J. S. Turberville, Century, Fla.—I just want to emphasize the fact that a lot of men don't expect to have a tubal pregnancy to be diagnosed until a few months after marriage, and we overlook the fact that women twenty-five and thirty years old, getting married, have tubal pregnancies and bleed to death before they have been married a month.

I have failed to make the diagnosis in nearly every case until hemorrhage was present. I have seen four lately and nearly always hemorrhage was set up before the diagnosis was made.

I would like to hear the chair discuss that. I

think that he has seen more cases of tubal pregnancy than any other man in the country.

Dr. R. L. Sanders, Anderson, S. C.—Just one point about this condition of ectopic gestation that I would like to lay particular stress upon—the history of the case.

We have had under discussion here a great number during this meeting, and in many of them the history of the case has been greatly stressed.

I do not think a condition in the world requires a more careful history-taking than this suspected tubal pregnancy. In the last three or four years I have operated upon eight or nine tubal pregnancies, and in the majority of these cases, with a very careful history, we could ascertain the trouble before the operation; that is, the irregular menstrual history the doctor spoke about, and a possible period of sterility and the hemorrhage. Now, in my experience, these patients have not had a profuse, but a very irregular flow for three or four weeks, and in nearly every instance a mole from the uterus was passed. One case, particularly, I was called to see, after getting the history, I felt sure was tubal pregnancy, but they told me the patient had just passed a fleshy mass, which had been destroyed. They sent out to where it had been covered up, and I found a beautiful mole, so that the diagnosis was established and the operation done for tubal pregnancy.

One other thing, the fact of not too hastily operating upon these cases. In this series of cases that I have had in not one instance did I find it necessary to do immediate operation.

I think very few cases will bleed to death. A few will, but the majority will not, and owing to the feebleness of the heart and the clot forming, I believe you will get better results in a later operation than when the patient is operated upon immediately, with the pulse feeble and the patient liable to shock.

Dr. H. T. Inge, Mobile, Ala.—The proposition of diagnosis of tubal pregnancy may, to some, be an extremely easy matter. If the mass always occurred in either flank suddenly, with hemorrhage, we might, with justice, think or suspect tubal pregnancy, but I have been unfortunately placed in the position of having quite a few cases of tubal pregnancy occur in patients that were like Caesar's wife—unmarried patients—cases that I could not dare suspect of being pregnant, and the circumstances were such that I had no way of investigating as to their liability of being pregnant.

I appreciate the fact that unless there is a rupture of the tube that there is no need of an immediate hurry, but I can see no use of waiting for any great length of time after you have suspected tubal pregnancy, because, in my opinion, the further the advancement of the stage, the greater becomes the liability of extreme hemorrhage in performing the operation.

A case that fell into my hands, and which was reported to the Alabama State Medical Association in 1904, was one that any one would have been liable to have been mistaken in. The case was brought to me from an adjoining town, with the history that the woman had had a miscarrige. Three doctors were with her during the miscarriage, and she did miscarry unmistakably, with a mour-month fetus—about—and still the woman's condition was something alarming. Her pulse was weak and thready, temperature sub-normal, pulse about 150, the most agonizing labor pains you ever saw.

On examination it had never occurred to me or to the other physicians that there was any indication of a tubal pregnancy following a four months' miscarriage.

On a vaginal examination, however, the fetus was distinctly outlined in the cul de sac.

You could palpate the different forms of the baby and every moment the most violent expulsive pains were driving down on the patient.

She was operated upon as early as possible and a living fetus removed from the abdomen. This fetus was probably seven and a half months of age. The interesting portion of the case was that the uterine fetus was not over four months of age and the extra-uterine fetus was a live child, seven and a half months of age.

This case, as I state, was reported to the Alabama State Medical Association, and it was one in which, of course, any one would be liable to error in diagnosis.

But I must say that it has been my custom that as soon as I diagnose the case to be one of ovarian or tubal pregnancy I invariably operate as soon as I can get the patient on the table.

Dr. Griffith—I think there are some cases in which we ought to wait. When a patient is brought in almost moribund and there is every reason to believe she will die on the table, her chances are better if we wait a day or so.

A few years ago experiments were done on dogs, in which the uterine and ovarian vessels were cut and the abdomen quickly closed. They continued to bleed for a while just as an extra-uterine would, but soon the intra-abdominal pressure would rise sufficiently to stop the bleeding, and as well as I remember none of the dogs died from hemorrhage.

Of course, there is an excellent bed for infection and by waiting too long a peritonitis may develop. If the woman is in even a fair condition, operate immediately, but if almost exsanguinated, wait until she picks up a little. In the operation we ought to respect the uterine cornua and not merely amputate the tube. A few years ago I saw an ectopic pregnancy in the stump of a tube which had been previously amputated for some other condition. The stump was only about one-quarter of an inch long.

Dr. Carter (closing the discussion)—I appreciate most heartily the liberal discussion of this paper, and I wish to thank the gentlemen most kindly.

The points Dr. Martin and Dr. Sanders brought out about not operating too early in a state of shock, I could not bring out those points because it would have made the paper too long.

I do not believe in operating in extreme shock when it is preventable.

As I said, every case, has to be a case to itself, and no one can say just what to do in this case or that case, but each case must be a law unto itself.

If I get a case that I do not believe can stand an operation, I wait for a while.

There was a case in which I was called over

the phone, but was not to be had, just a few days ago, after this paper was written. The doctor told me about it afterwards. He called some other doctor, but before the second doctor could get there the patient was dead—thirty minutes after she was taken ill. His judgment was she had ectopic gestation. He told the other doctor to meet him at the hospital and before the automobile ambulance got there the patient was dead. So you cannot wait, and if the patient's condition will permit it, operate. Of course, if possible, you wait when the patient's condiiton will permit it.

In regard to ligating: I remember that experiments were made about ligating ovarian arteries of dogs, etc. I reported one case at the Tennessee State Medical Association last year—a case of hemorrhage following an operation eight hours after an ovarian operation. She died promptly. I am afraid of hemorrhage since I lost that case. I just simply did an ovariotomy in that case. We found the bleeding, the abdomen was full, but the shock was so great the patient did not rally and died. I don't want to turn an ovarian artery loose. They die from hemorrhage. No question about that.

As to Dr. Inge, in regard to the unmarried, etc. If you take a most careful history, you will find that the patient has menstruated or had some discharge from the uterus. It is usually a rule that you do have more or less discharge from the uterus just soon after the symptoms, you might say, in which ectopic gestations have occurred. Of course, in the unmarried, you want to get a careful history, and you don't have to tell the patient or the people so, but if you think it is justifiable, you give the patient an anesthetic and make a careful examination.

This is a most interesting subject and I want to thank the gentlemen very kindly for their discussion.

SOME OBSERVATIONS ON THE OPERATIONS FOR GLAUCOMA WITH SPECIAL REFERENCE TO THE OPERATION OF IRIDOTASIS.*

Dr. Dunbar Roy,
Atlanta, Ga.

It is not the intention of the writer to discuss in detail the subject of glaucoma, for he has neither the inclination nor ability if he should so desire, since of all ocular diseases which come under our observation none are so little understood as far as its pathogenesis as this one disease, glaucoma. The theories as to the causation of this disease are numerous and each has its advocates, the only point where a unanimity seems to exist is the recognition of definite clinical symptoms and the fact that these are occasioned by some interference with the exit of the intra-ocular fluids.

While the theories as to the causation of glaucoma are numerous, such is also true as to the various surgical methods which have been offered for its relief. This statement, however, can only apply to those forms designated as chronic non-inflammatory glaucoma, for experience has taught that in the acute fulminating inflammatory variety no operation has been found which gives better results than the broad peripheral iridectomy. According to my experience and that of other observers, the chronic non-inflammatory glaucoma is an exceedingly insidious disease and often unrecognized in its early stages by even the most experienced ophthalmologist. I believe that this is due in a large measure to our failure to use frequently the perimeter in estimating the field of vision in many of those obscure refractive cases where the correction with glasses does not seem to give the desired result. To use the perimeter successfully requires a great deal of time and patience and I fear that we, as ophthalmologists, often neglect its use because of a clamoring, restless crowd in our reception rooms. Many of our best German ophthalmologists believe that we cannot tell the progress of this disease unless we make accurate perimetric measurements at short intervals. Much work as yet remains to be done before we can give the exact cure of this disease, although ophthalmologists are almost universally agreed that some degree of blocking in the neighborhood of the spaces of Fontana, or, as some call it, the "filtration angle," is almost universally present.

I wish to review for a moment the various methods of treatment which have been advocated for the relief of the simple non-inflammatory glaucoma and to give some personal experiences with the operation of iridotasis. I shall not discuss the treatment by the use of myotics, such as eserine or pilocarpine, although many of our best ophthalmologists believe that this procedure will accomplish better, or at least equally as good, results as the operative methods. In fact, some go so far as to say that cases are made worse by any operative procedure.

In 1908 Posey, of Philadelphia, read a paper before the Ophthalmic Section of the American Medical Association upon the treatment of simple chronic glaucoma by the use of myotics based on a study of sixty-five cases treated in this manner over a number of years. Posey, in concluding his article, has this to say: "When comparison is

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made of both of these series it will at once appear that myotics exerted a more beneficial influence than iridectomy." However, Posey very aptly says that his argument is by no means conclusive and quotes many other ophthalmologists who believe more decidedly in the operative results. While a further study of simple chronic glaucoma may lead ophthalmologists to place more dependence in the use of myotics as a treatment for this disease, the fact that different operations have from year to year been devised would indicate that the large majority of ophthalmologists are still wedded to the operative treatment. Personally, my own experience was rather in favor of the myotic treatment until I had used the operation of iridotasis and since its use I feel much more encouraged as to my final results.

I wish to discuss for a few minutes the technique of the various operations which up to the present are used in the treatment of glaucoma, thus reviewing the subject from the surgical standpoint.

1. Iridectomy. This is perhaps the most universal operation performed and has been constantly in use ever since von Grafe first used it as an operation for glaucoma. According to Priestly Smith, its beneficial results are due to the opening up of Fontana's spaces. This operation is too familiar to need further elaboration, since its technique is thoroughly familiar to every ophthalmologist, differing from the ordinary iridectomy only in the peripheral character of the incision and the amount of iris removed.

2. Sclerotomy. de Wecker's name is prominently associated with this operation as a substitute for iridectomy, but has never received much favor at the hands of ophthalmologists in general. Nettleship, after an extended trial of this operation, says that he prefers iridectomy. According to de Wecker, the operation is performed as follows: "The pupil is fully contracted by eserine or pilocarpine. The incision is made with the ordinary linear cataract knife and resembles a scleral incision for extraction of cataract except the middle third is left uncompleted. Puncture and counter puncture lie one millimeter from the corneal margin, and one so placed that the knife-edge forms a tangent to the angle of the chamber. After slow evacuation of the aqueous the knife is slowly and steadily withdrawn, leaving more or less of the sclera undivided."

Some ophthalmologists make what is known as as a posterior sclerotomy, i. e., an incision directly into the vitreous and sometimes combine that with an iridectomy. Dr. Arnold Knapp has reported several cases operated upon in this manner with most excellent results. The advantages claimed for this is that the preliminary posterior sclerotomy allows the tension to decrease and thus the anterior chamber is deepened so as to allow an easier iridectomy. An iridectomy properly made and placed in any form of glaucoma is an exceedingly difficult operation and I agree with Dr. Webster Fox, who says that he knows of no operation which requires more skill. The late Dr. Chas. Stedman Bull has well said in reference to this operation of iridectomy, "We must learn to look upon iridectomy, not as a means of cure, but as a method of arresting the course of the disease or of delaying its progress. Iridectomy should be regarded as the first resort rather than the last resort in glaucoma."

3. Cyclodialisis. In 1905 Heine described a new operation for glaucoma which he called cyclodialisis, consisting as it does in detaching the ciliary body from the sclera to establish a communication between the anterior chamber and suprachoroidal space and to reduce the intra-ocular tension. I have had no practical experience with this operation, but many have been much pleased with their results, especially Dr. E. V. L. Brown of Chicago. According to Meller, the operation is performed as follows: After thorough cocainization the conjunctiva and capsule of tenon are dissected up so that a small area of the sclera, about 5 mm. from the corneal limbus, is exposed. An incision is made through the sclera parallel to the margin of the cornea and preferably down and out and not longer than 2 mm. The incision is made with a lance knife slowly and carefully without pressure to avoid injury to the uvea. That the sclera has been penetrated can be told by the release of the resistance and the appearance of the uvea in the bottom of the wound and the fact that the slightest movement of the instrument on the ciliary body causes pain. During the procedure the eye is rotated strongly upward and fixed by forceps. The second step consists in the introduction of an iris spatula into the wound and carrying it forward between the sclera and the ciliary body. The instrument is entered somewhat obliquely and as soon as it has passed through the sclera it is made parallel with the surface of the sclera and pushed on gently until its tip appears in the anterior chamber. The third step consists in the separation of the ciliary body from the sclera. This is accomplished by giving to the spatula a side to side movement. The separation extending from the vertical meridian below to the temporal side. The spatula must not be entered further into the anterior

chamber than to permit its tip being always visible. After the undermining is completed the spatula is brought back to its primary position and slowly withdrawn. Meller says the real indication for this operation is "the impossibility of performing iridectomy from the presence of very high intra-ocular tension and absolute glaucoma which has progressed far." Fuchs says he has abandoned cyclodialisis as the symptoms recurred and histologic examination showed that the communication was not permanent between the anterior chamber and the suprachoroidal space. He still believes in the operation of iridectomy. Arnold Knapp has used the operation of cyclodialisis in several cases and has been much pleased with his results.

4. Sclerecto-iridectomy. (Lagrange.) In 1906 Lagrange devised this operation which was only a modification of several others. He reasoned that if he could produce a filtering cicatrix by not causing an entanglement of the iris in the wound he would accomplish what many ophthalmologists believed to be the solution of the best operation. Dr. Greenwood, of Boston, has reported his experience with this operation and seems most enthusiastic in the results obtained. To quote Greenwood, he says the operation "consists in a sclero-corneal incision well into the angle of the anterior chamber, with the knife held, in cutting out, with edge slightly backward so as to bevel the sclera and make a broad conjunctival flap. Then, with the conjunctival flap pulled down over the cornea, a portion of the beveled edge of the sclera is cut off with curved scissors, the amount varying with the degree of plus tension, as experience shows that the greater the tension the less the amount to remove. A good iridectomy is then made and the conjunctival flap replaced after all iris tissue has been freed from the angle of the incision. In regard to this latter point, Lagrange holds that his operation has not been properly performed if an entanglement of the iris tags occurs." Greenwood used a curved de Weckers iris scissors to cut the beveled sclera. The eye is bandaged just as in an ordinary iridectomy. This operation has not as yet been universally accepted, although several excellent ophthalmologists have reported good results.

5. Trephining. Elliott-Fergus Operation. In 1909 Freeland Fergus devised a modification of the Lagrange operation, which during the last two years has been used by many ophthalmologists with varying modifications. Fergus makes a conjunctival flap and then, with a small trephine, he removes a button of the sclera close to the corneal margin and thus enters the anterior chamber. The aqueous humor is thus allowed to escape after which a small spatula is made to replace the iris and then the conjunctival flap falls over the wound. Elliott modified this by snipping out a piece of the iris at the point of the trephine opening, thus making a button hole in this tissue. Last summer, while in Philadelphia, Webster Fox was using the trephine operation with great enthusiasm and was claiming better results than he had heretofore obtained. The operation is simple and seems to be free from complications so far as we may determine from the reports which have as yet been received. Personally, I have not used the trephine, but in witnessing the operation as performed by others it certainly seems to have some advantages. On the other hand, Little thinks there is danger of septic infection of the eye at a late date after this operation. He thinks that filtering cicatrices are liable to be the starting point of a pan-ophthalmitis. Berry thinks that Fergus' operation would be useful in forming a cystoid scar, but is uncalled for where an iridectomy is liable to be successful.

6. Iridencleisis. In 1907 Holth devised this operation, which he called iridencleisis. I have never seen this operation performed, but from the description it is possibly performed as follows: A conjunctival flap is made with the cut about 10 mm. from the sclero-corneal junction, with a flap held out of the way the keratome is entered into the anterior chamber. The iris is now grasped and incised. One piece of it is pulled through the keratome incision and allowed to remain while the conjunctival flap is replaced, the eye bandaged, etc., as in the iridectomy operation. Holth has reported a reduction in the tension in 85 per cent of his cases. Borthens' experience with this operation was favorable, but it required unusual skillful technique. Few American ophthalmologists have even mentioned this operation.

7. Iridotasis. In the March number (1911) of Knapp's Arch. of Ophthalmology there appeared an article by Dr. Johan Borthen, of Bergen, in which he described his operation of iridotasis in acute and chronic glaucoma and also gave his statistical results. As to the latter Borthen says: "Of the 97 operated eyes, 33 have been observed for a period of from one and three-quarters to two years or more. With the exception of two cases of chronic inflammatory glaucoma in which iridotasis was ineffectual, all these cases were cured, and normal tension and vision and fields as before operation; 27 cases were observed from one to

one and three-quarter years after operation. All but one case, chronic inflammatory glaucoma, unimproved, were satisfactory; 19 cases were under observation for two months or less. Of these, two cases of chronic inflammatory glaucoma were unimproved, and there was one case of panophthalmitis. We must admit that the results of these ninety-seven operations were unusually gratifying, as tension was almost invariably reduced to normal or below in some cases, while as much vision was preserved as could possibly have been saved in any event." After reading his article, I determined to try this operation, so that since March last I have operated upon five eyes in three patients. Time does not permit me to give a complete history of these cases as I hope further experience will enable me to make a more definite statistical report in the future.

The first case was an old chronic glaucoma in the right eye. This patient, a lady 55 years old, had suffered with her eye for years. She had intense periodic pains so that she could not sleep. Tension was plus 2. There was decided cupping of the disc with atrophy. Vision was only the counting of fingers at two feet. The right eye had been removed six years ago, evidently for the same condition. Patient operated upon in March last at the hospital. Immediately after the operation the tension of the eye was almost minus. Healing was uneventful and the patient left the hospital in two days. Results: Tension has remained perfectly normal; all pain has disappeared and she has had no additional fulmination attack; vision remains the same.

The second patient was a lady 52 years old. Double chronic glaucoma. Both irides practically in contact with cornea. Tension plus 3 in both eyes. Left eye was blind with complete atrophy of optic nerve. Right eye also showed atrophy of nerve, but vision was fingers at five feet. Suffered severe pains in both eyes. In May both eyes were operated upon by the method of iridotasis at the hospital. Results: Normal tension immediately in both eyes and this has been retained. Vision was, of course, not improved. All pains have disappeared and the patient is thoroughly comfortable.

The third case was a lady 49 years old. Had suffered several years with her eyes. Consulted me March 7, 1912, for pains and periodic obscuration of vision in right eye. Vision was 20-100 and with correction 20-70. Left eye showed vision 20-50 and with correction 20-20. In the right eye there was a dilated pupil, shallow anterior chamber, some atrophy of optic nerve and tension plus 1. No signs of glaucoma in left eye. She was given a solution of eserine for the eye and iodide of potash internally. The improvement from this was only temporary, and severe pains continued with diminished vision. On July 17, 1912, at St. Joseph's Infirmary, an iridotasis was performed on the right eye. Results: Tension became normal, pains disappeared and in September, with correction, her vision had increased to 20-50. On September 29th patient returned with a similar attack in the good eye. Vision had been reduced to 20-50 with correction. She complained of the rainbow lights and obscuration of vision. Tension was plus 1 and a shallow anterior chamber. Having had such good results on the other eye, I immediately did an iridotasis on the left. The results were equally as good in relieving all symptoms and has remained so with a decided betterment of vision. She left the hospital in four days and returned home. In neither eye was a myotic used after the operation. These results, while few in number, have been so gratifying and so much better than I had obtained previously with the operation of iridectomy that I must say I hold the operation in high esteem. The simplicity of its technique and the absence of all signs of irritation following the same certainly commends it to the inexperienced operator. The only criticism that could be made is the fact it has not been tried long enough to satisfy its permanent value, and the fact that a prolapsed iris is supposed to make a dangerous eye, especially in producing a sympathetic ophthalmitis. In none of Borthen's cases was there the slightest trouble.

The technique of the operation is as follows: Complete cocaine anesthesia is produced. In inflammatory forms or in nervous individuals it is best to use general anesthesia. All the usual antiseptic precautions are taken. It is absolutely necessary to have a good assistant. With the eye held in downward position with fixative forceps, a 10 mm. cut is made in the conjunctiva above the cornea in median line and about 9 mm. back from the sclero-corneal junction. The flap is now undermined with scissors as close as possible to the corneal rim, taking care not to go too far. The assistant now holds the flap forward out of the operator's way. With a small keratome the anterior chamber is pierced just back of this corneal margin. The iris forceps are now inserted in the wound, the iris grasped toward its pupillary border and drawn into the wound and there left. The conjunctival flap is placed over this and the eye properly bandaged. Just a small knuckle of iris is drawn into the

wound. On the first case I tried to suture the conjunctival flap, but found that this was entirely unnecessary. The patient is kept in bed for twenty-four hours and then allowed to sit up. While I have not done this operation in my office and allowed the patient to return home immediately on its completion, I see no reason why this should not be done. The only point which my limited experience has taught me is to make a cut with the keratome as small as possible so as to render the iris less liable to drop back into the anterior chamber.

In conclusion, allow me to say that while my experience is, of course, very limited, yet I have been so much impressed with the value of this operation at least in the chronic non-inflammatory glaucoma that in the future I shall use this operation immediately rather than lose valuable time by the use of myotics.

DISCUSSION.

Dr. Feingold.—The paper is open for discussion. I believe that, to the oculist, there is no field so dear as glaucoma; because he feels how helpless he is, many times, in its presence.

D. A. W. Stirling, Atlanta, Ga.—I have listened with great interest to this paper. As you say, Mr. Chairman, nothing is more interesting and important for us than the subject of glaucoma. At the present moment there has been a recrudescence of interest in it among both pathologists and operators. Henderson's name has recently been especially associated with its pathological side, and those whom Dr. Roy has mentioned have also provided interesting material for discussion, as well as some that he has not mentioned, particularly that of certain men in India who do more operations than any others the world over.

One of the points that we must consider in deciding whether to perform an operation or to use a myotic depends on what we consider to be simple chronic glaucoma. In my opinion, whenever a case exhibits a distinguishable plus tension, it is a question whether one ought to call it a simple glaucoma at all. The pure cases of simple glaucoma are those in which one, unfortunately, sees what appear to be results of increased tension, and yet cannot distinguish the tension by ordinary means. When, for instance, the tension is so high that it is advisable to do a posterior sclerotomy, which I have used on many occasions—the first of these seventeen or eighteen years ago. The case is on a different footing altogether from those of a true simple glaucoma, in which one cannot find an increased tension, because the higher the tension the more is an operation immediately indicated and the more hopeful is the prognosis, supposing it has not gone on too long; an acute glaucoma is, of course, much more hopeful than a chronic one.

Regarding the use of myotics, this is, as Dr. Roy has indicated, a question that we sometimes decide with a great deal of difficulty. When there is absolutely no tension visible I have often felt very reluctant to advise an operation; and I have used in a number of cases a myotic for a considerable length of time with more advantage than there would have been in operating. Operating when the field is getting very small you may diminish it, and thus do the patient more harm than good. On the other hand, when the tension is distinctly up I think that an operation is at once indicated. The nature of the operation is the question Dr. Roy has been discussing. I have myself stuck to the older methods, because one does not see in the South here so many cases of glaucoma as men are seeing in India and in the large cities of Europe. I have felt that it was to them that we ought to look for guidance in this matter, and that when the time came for decision it should be left to them. We know that when an iridectomy is done properly, the point being not to snip away the iris, but to tear the iris out so that there is no root left at the position of operation, then the results are usually satisfactory. It is impossible to do an iridectomy properly by cutting the iris. You cannot get into the angle of the eye far enough. You have necessarily to tear it out if you want to open up the angle of the anterior chamber.

These newer operations—among others, Elliott's and the one Dr. Roy has mentioned in his paper—may turn out, some one or the other, to be better; but in the meantime it seems to me that the newer operations are still in a period of trial, and that not one of them has yet established its superiority. There is one objection that I have to that which Dr. Roy has mentioned: It seems to me that it is an unphysiological action to pull out an iris and leave it in the wound, there to become a part of that wound, possibly to be some time exposed to infection, at any rate to be nipped between the edges of the wound. I think that the history of the pathology of the eye would make me, at least, chary about using that operation for that reason.

Dr. U. S. Bird, Tampa, Fla.—I have listened with a great deal of interest to this paper; but the question that rises in my mind, and that I cannot solve, is, Why is it that implication of the iris on one occasion causes an increase of tension, and on other occasions is supposed to relieve the tension? I do not question Dr. Roy's results, but I should like to understand how that is explained.

Dr. Clifton M. Miller, Richmond, Va.—I have not had much experience with this disease. I am rather inclined to the Elliot operation, however, and like it very much. The little mechanical trephine that we have now quickens the operation. I find it a very comfortable operation to do. I rise merely to mention what has been to me the most interesting patient that I have recently had, more on account of his history than anything else. He is a great-grandson of a woman who had glaucoma and thirty of whose descendants have had that disease. It usually occurred between the ages of sixteen and twenty-five years. Two of these people have been patients of mine. I did the Elliot operation on one a short time ago with good results. His glaucoma began at fifteen and his sister's at sixteen years. Both had iridectomy

done, with preservation of vision. According to Dr. Stirling's classification, these were not chronic cases, because both patients had (a rise of tension) inflammatory symptoms and elevation of tension. In one, the sister, the vision was preserved, and did not deteriorate after the iridectomy was performed; the one upon whom I operated by trephining had gradually increasing tension in the right eye.

A Member.—We should like to hear from the chairman.

Dr. Feingold.—It is true that the hour is late, but I believe that all would be willing to stay longer for important discussions. The chair has been called on to discuss this subject, and I do not want the chair to appear to be a coward.

I believe that the most important keynote of the question of glaucoma and Borthen iridotasis has been struck by Dr. Bird: "Why should an anterior synechia, an adherent leukoma, in one instance produce increased tension, and in the other instance produce a decrease in the tension?" As I have said, I believe that Dr. Bird has asked a very good question, and I asked the same question last summer in Atlantic City. Why should, in one instance, an adherent leukoma bring about increased tension, and in another lower tension? There is somewhat of an answer to be given to that. First of all, I believe that Borthen's operation has a double purpose, not only to produce a filtering cicatrix—if the incision is really small it does not produce a filtering cicatrix, but also another purpose—to produce an effect similar to that of eserine or pilocarpine in stretching the iris away from the angle and, if possible, disengaging the peripheral anterior synechia that exists. This is my explanation of the action of Borthen's operation, because I, for one, cannot see how a filtering cicatrix alone could do what is claimed for this operation. If we look at the results of operation we are many a time inclined to perform an iridectomy for glaucoma or as a part of the cataract operation. Very often, for some reason or other, the iris remains engaged in the wound. We never see any filtering cicatrix there. We never see it, even microscopically. In some instances we even see glaucoma follow these operations. What I want to show is that, in spite of the iris's being embedded in the scar, I cannot see that we are forming a filtering cicatrix. Therefore, if Borthen's operation will produce any lowering of tension, it will not do so by acting as a filtering cicatrix. I have not tried Borthen's operation, although I have been familiar with it since its first appearance in 1905. I was always afraid of inflammation. I have so often seen inflammation occur as a sequel to a piece of iris being embedded in a scar. I have now under my care a little girl of three, who acquired an opacity of the cornea in consequence of phlyctenular keratitis, and she has had three attacks of acute inflammation of the iris, enucleation having been necessary on account of the tag of iris that lay on the conjunctiva. For that reason I have been somewhat afraid of any operation that would put the iris in such a place where it would be easily exposed to infection.

I have performed the Lagrange operation. I have kept the patients under observation, and the tension has remained permanently low. I have seen no retention of vision, however. In one case especially I know that the vision has continued to get worse. We cannot blame the operation for that because the disease might have already affected some of the fibers that apparently were functioning at the time I performed the operation, and the paralysis of the fibers showed up only after the operation.

One thing that is important to my mind is the observation with regard to the classification of glaucoma. What is simple and what is inflammatory glaucoma? The characteristic of a simple glaucoma seems to be that there is no marked rise in tension. Until we understand what simple glaucoma is we shall be doubtful what procedure we have to adopt. In a recently published paper, the name of the author of which I have forgotten, stress was laid on the importance of that one characteristic, how low the tension is in simple glaucoma. The author dwelt on the fact that if you compare the two eyes in the beginning you will very often find a rather low tension in a case that is true glaucoma, and only by comparing the diseased eye with the other will you see that the patient has true glaucoma.

There was another case that I saw a few weeks ago, and I saw the physician whose mother was the patient at this meeting. In the left eye she had not even light perception. With the other she could see hand movements. The tonometer showed in the left eye, an eye that had no vision, twenty-seven millimeters of mercury—just a little above normal. The right eye has twenty-three millimeters—a little below the normal. In neither case could one say that it was much out of the way. Both eyes were possibly within the normal limits, so that in neither instance did we have marked increase of tension; yet she had decided, absolute glaucoma in the left eye and almost absolute glaucoma in the right eye. What made the case interesting was the difference in the tension of the two eyes, a point that was dwelt on by the author of the paper. The patient has improved somewhat and is feeling more comfortable. We cannot use the tonometer too often or too carefully, because it gives absolute figures by which we can see whether we have accomplished results or not, and whether the disease is progressing, especially as we know that in simple glaucoma we often find no tactile increase of tension.

I remember especially a case that came from Florida, for instance, with apparent chronic, inflammatory glaucoma in both eyes, one having an absolute glaucoma and the other having a vision of one-sixtieth. There was some symptom (?) of the posterior surface of one of the eyes, so I thought that possibly general treatment was indicated before performing an iridectomy. The tension before was sixty millimeters of mercury, and since the operation it is forty-five. The operation has done no good in spite of the fact that the patient feels better. I feel, however, very hopeless as to the result, because, in spite of the most beautiful, bright iridectomy, the patient still has a tension of forty-five millimeters of mercury

without eserin, although the tension goes down a little under eserin. It is important to use the tonometer in order to have exact figures by which to judge our results and the progress of the cases.

Dr. Dunbar Roy, Atlanta, Ga., closing.—This subject of glaucoma is exceedingly broad, and it is almost impossible to get through discussing it. There are so many different points connected with the subject that it is impossible to touch upon. I did not attempt to say anything regarding the pathogenesis because there are so many points that we do not understand. I wish I were in a position to answer the question of Dr. Bird. I do not know whether we shall ever know why inflammation of the iris at one time causes tension and at another time relieves it. Men are studying this question all over the world. The fact that different operations are being devised shows that the men are not satisfied with the operations that they have. As I have said in my paper, perhaps the broad peripheral iridectomy, taking out the iris, as Dr. Stirling says, is the operation most used for glaucoma, and probably, by a number, no other operation will be used. I have seen excellent results obtained by the use of the trephine. Dr. L. Webster Fox, of Philadephia, employs it. I saw him operate about a year ago at the meeting of the Clinical Society in Philadelphia, and he was most enthusiastic over this instrument. He is a very enthusiastic man anyhow over everything, and the next time I see him he is liable to be taking up some other operation. This operation, however, appeals to me on account of the simplicity of its technique. The Fliot operation (?) is not a simple operation, but the operation of iridotasis is simple, and the results are not inferior.

The point of infection of the iris has not entered into my consideration. I do not believe that there is much chance of such infection because the conjunctiva closes down over the iris and forms a firm cicatrix; but what has bothered me is sympathetic trouble in the other eye. I have seen this occur in cases in which there was no infection or anything else. The main question with me is the question of future irritability of the other eye from retention of the iris in the wound.

Dr. Feingold.—That is the point: infection from sympathetic ophthalmia.

Dr. Roy.—I am like old Mackenzie in that I am not sure that sympathetic irritation is an infection. It may be through the sympathetic nerves. The fact that iridotasis is simple reduces the tension, makes the eye comfortable and relieves the symptoms, has to me been a most happy solution of the problem so far as the operative work is concerned. I do not abandon myotics, because I would not operate until I was sure that an operation should be done, but when an operation is done I think that iridotasis gives me better results than I have obtained by iridectomy. Many men claim that the iridectomy makes the vision worse, and that it should not be performed. I do not believe that the iridotasis will better the vision. In my cases it only kept the vision. The changes in the optic nerve decide the question of increased tension. I believe that iridotasis is an operation that in the majority of cases is good to be used and will give satisfactory results.

TAMPONADE TREATMENT OF THE ACCESSORY SINUSES AND ITS EFECT ON INTRAOCULAR INFLAMMATION.*

By Wm. S. Manning, M.D.,
Jacksonville, Fla.

In presenting this paper for your consideration it is rather my desire to add a useful procedure than to present a substitute for our present methods.

The intra-nasal tampon is, of course, not new as a means of applying medicament to the nasal cavity. As a means of draining the sinuses and allaying intra-ocular inflammation, however, I think this procedure has not received the recognition it deserves.

My attention was directed to it a year ago when I was treating a physician in this city for a severe retino-choroiditis. I was using the usual methods of mydriasis, potassium iodide, etc. The treatment was very inefficient, as is nearly always the case, unless you can base your treatment upon a specific history.

It is particularly, in so-called "idiopathic" cases or those in which there is apparently no cause for the inflammation, that I find this treatment of special value. In these cases the ordinary methods are almost valueless and I am sure we have all had cases in which we felt helpless of being of any great assistance to the patient.

It is true that many of the cases are self-limited and do not go on to blindness, but I think few of them are due to the treatment, but rather to the mildness of the disease. In the case of the physician before mentioned, all central vision was lost in the right eye. The left became affected and was rapidly deteriorating when he put himself under the care of a physician in another city, who, by this method, rapidly cleared up the inflammation, leaving the vitreous perfectly clear and preserving that portion of the choroid and retina which was not previously destroyed by the disease.

This man, it afterward proved, had a frontal sinus and ethmoidal infection. But one that had never given the slightest symptom except frontal headache, which had been attributed to ocular condition.

I am thoroughly convinced that chronic frontal and ethmoidal infection is the sole cause of many of these so-called "idiopathic" cases of choroiditis

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and retinitis. When I say sinus infection I mean largely what is termed by Dr. Dowling of Albany, N. Y., a residual infection; that is, an infection of so mild a nature that it causes the patient either no inconvenience or else it flares up at such widely separated intervals that he probably would never mention it even if questioned along those lines.

The method of treatment is as follows: A "tampon" of such length and size as will snugly fit between the middle turbinated body and the septum and extend from the anterior portion of the nose to the canal posteriorly. These tampons should first be saturated with an aqueous solution of argyrol, forty grains to the ounce. Through capillary attraction they will deplete the proximate soft tissues and drain the ethmoid cells and other sinuses. In order to drain the maxillary sinuses the tampons should be placed under the scroll of the middle turbinated body and above the upper part of the inferior turbinated body.

The tampons should be of sufficient size to fit snugly, but not large enough to cause pain on introduction. It is my custom to allow them to remain in the sites for from twenty minutes to one hour. The first effect is congestion of the conjunctiva, sneezing and nasal discharge. On removal of the tampons, where infection is present, they will be found to be bleached on the upper surface and sometimes throughout. This bleaching is in proportion to the amount of infection.

Dr. Chas. E. Terry, of Jacksonville, in a paper published in the "Transactions of the Florida Medical Association of 1909," found after extensive investigation in the laboratory that pathogenic organisms were the only ones that cause this decolorization. This, of course, makes the tampon valuable as a diagnostic as well as a therapeutic agency. After removing the tampons the nasal cavities are thoroughly cleaned with normal salt and sprayed with a bland oil.

I have treated by this method only five severe cases of idiopathic retino-choroiditis, in which blindness threatened, and in every case I have gotten splendid results, causing a complete disappearance of the inflammatory symptoms. Two of these cases are of about four years' standing, one of two years. One case had a relapse after about one year, but the eyes immediately cleared up on the institution of the treatment.

I have treated twenty-six cases of iritis by this method, followed by marked improvement in all cases except two, in which syphilis was the aetiologic factor. In these syphilitic cases it seems to allay pain to a certain degree, but I could not see that it greatly shortened the attack. About two-thirds of these cases were iritis following corneal ulcer, usually following injury. Three cases had hypopyon.

By far the largest class of cases which I have treated have been those obscure cases of frontal headache, variously diagnosed as malaria, gastric, refractive, etc. In these cases in which local examination and transillumination are negative, I both make my diagnosis by noticing bleaching and give relief by the use of the nasal tampon.

The theory that Dr. Dowling has elaborated concerning the influence of the accessory sinuses on the eye is stated by him as follows: "The nasal accessory sinuses at some time or other have become infected with some pus-producing organisms. These germs may remain dormant after the case is apparently cured, without occasioning any particular symptoms. Subsequently the patient becomes weakened through some systemic disease or the eye overstrained through excessive use or the use of incorrect lenses; the eyes then become the point of least resistance. Some exciting agent may occasion excessive flow of mucus within the sinuses, thereby completing the needs of the laboratory, namely, equal temperature, moisture and proper media for the development of germs; and through the germ development toxins are produced which enter the lymphatics of the blood currents and in this way occasion metastatic inflammation. In some instances it is toxins and in others actual infection through the germs themselves. In one instance there is inflammation with plastic exudate, in the other actual abscess formation. In the one instance we may have plastic iritis, in the other corneal abscess. Again, we may have simple irritation of the nasal nerve as it passes through the ethmoid regions and this through the relation to the lenticular ganglion and the long ciliary nerves and the infra-trochlear nerves may occasion erratic muscular trouble.

"Usually there is a spasmodic blurring of the eye at some time. These conditions are frequently put down as ciliary spasms, but in truth they are nerve disturbances of toxic origin. Their cure may readily be obtained by the methods here described.

"A theory which has seemed to prove practicable is that disease of the eyes which have been dependent upon complicating states of the nose or the accessory sinuses are more amenable to treatment when staphylococcus alone is present. Cases in which mixed infection is evident are amenable to improvement and sometimes cure, but are more prone to relapse.

"Those cases in which streptococcus is present are most grave, and are only amenable to operative methods, and are likewise apt to prove progressive with ultimate serious results to vision. In some cases actual blindness is the final outcome. Furthermore, organic changes may ensue as the result of any of these changes or infections. Reabsorption of exudate is observed in the simple staphylococcus infections, partial absorption in mixed infection, but in pure streptococcus infection there is definite destruction of tissues."

Dr. Dowling has treated numerous cases of glaucoma by this method and with splendid results. This method of treating these cases by the nasal tampon is, on reflection, a rational one, since it acts as a powerful depletive, both through its capillary and lymphatic action. The argyrol also has a very soothing and at the same time germicidal effect.

I wish to repeat that I think many cases of ocular inflammation at the present time called "idiopathic," in other words, without apparent cause, are the result of residual or active infection of the accessory sinuses and can be best treated by correcting the sinus condition, either by operation or treatment and in my hands the method of treatment described in this paper has proven a most acceptable and satisfactory one. An autogenous vaccine has been used in conjunction with it in several cases with very good results.

In closing this paper, I desire to express my thanks to Dr. Dowling, the originator of this method of treatment, as applied to inflammation and for the assistance given me in the preparation of this article.

DISCUSSION.

Dr. Manning.—I want to add that when I wrote the paper I did not know that I should have the pleasure of having Dr. J. I. Dowling, of Albany, N. Y., with us today. Otherwise, I should not have written it, because I feel that he can present it in a more able manner than I have done, and with a greater number of cases.

Dr. Feingold.—When Dr. Manning wrote to me about this paper, he asked, at the same time, that the privilege of the floor and that of opening the discussion be granted to Dr. Dowling, and that the invitation of the Southern Medical Association be extended to Dr. Dowling. This has been done, and I hope to hear from him. Dr. Dowling, allow me to extend to you the privilege of the floor. The section is delighted to hear from you.

Dr. J. I. Dowling, Albany, N. Y.—Mr. Chairman and Members of the Society, I thank you. I have been very much interested in Dr. Manning's presentation of this subject and because of its great value I came from Albany to corroborate some of the statements that he has made. Some of them will probably appear strange to you, and your natural conclusion will be one of skepticism. Personally, I like to meet skeptics, in order to prove to them that something different from the generally accepted knowledge is valuable. It may be of interest, also, for you to know just how I arrived at the conclusion that I have regarding the efficacy of cotton tamponades saturated with argyrol. Starting some fifteen years ago I studied the specialties of eye, ear, nose and throat. I was dissatisfied with the results in many conditions, and tried to find a better way to treat them. Men were then propagating their views concerning the sinuses and their relation to ocular lesions. Onodi and others presented their anatomical studies of the sinuses as related to the eye, and so I then commenced to examine the eye, ear, nose, throat, and pharynx before instituting nasal treatment. Then, after doing so, I made a re-examination to see what had happened. I was thus led to a knowledge of what might be done by treating the nose, and to further conclusions regarding the treatment of sinuses. I had had practice in gynecology, and it struck me that if the pains in the back in such cases might be relieved by tamponades of ichthyol and glycerin in the vagina, so distant pains in the head might be relieved by tampons in the nose. I started to use the same solution in the latter cases as in gynecological practice, and in some instances I found benefit from doing so. Then I began to reduce the strength of the solutions and to use other solutions. I used protargol and other colloidal silver preparations and finally stumbled upon argyrol. I was trying to find something of true efficacy. The strength that I have found the most beneficial is forty grains to the ounce. I have tried various strengths. I believe the efficacy of this strength may be due to the probable fact that its colloidal nature most nearly approximates the colloidal character of the disease products of the affected mucous surfaces in the tissues of the nose, and so there may be a greater affinity between these two colloids. This is further enhanced by the capillary attraction induced by the cotton tampons. I look upon this method of argyrol tamponade as a positive method of treatment and also of determining the presence of residual infection; and so in cases of iritis or disease of the uvea I institute this, not alone for treatment, but for diagnosis. The bleaching of the tampon seems to be absolutely diagnostic of the presence of infection somewhere within the nasal cavity. You cannot always tell where, but further investigation by transillumination, or possibly by the use of the radiograph, will elicit what the tampon will not always tell. It is necessary to place the tampon well up toward the orbit of the eye within the nose, as far as possible between the middle turbinates and the septum. This only approximates the drainage point of any of the sinuses. We do not reach the sphenoid or the posterior ethmoid points of drainage, but we approximate them, and therein lies the reason why the argyrol tampons must be pushed up so as to occasion irritation. Then the tissues are depleted of the materials of infection. If the sphenoid sinus is infected, you find the posterior portion of the tampon bleached, whereas the other part remains

blackish. If the tampon is bleached throughout its entirety you may be sure that you have an ethmoiditis. If the anterior portion alone is bleached there is infection in the frontal sinus and the anterior ethmoid cells; and if the central portion is bleached it is probable that the maxillary sinus is involved.

This may seem strange, but I will just relate a point of diagnosis that I have observed in examining for disease of the sinuses, which is the presence of a point of erosion upon the septum opposite the point of drainage of the maxillary antrum. If it is deep and clear cut the infection results from the maxillary sinus. The blowing of the nose brings the mucus out with great force and splashes it against the septum. This is a point of diagnosis in determining whether the antrum is infected or not.

As to the value of this treatment in eye conditions, Dr. Manning has cited many cases proving it. I wish to state further that I have found it useful particularly in **recurrent cases of iritis.** These cases may be put down as rheumatic, but I believe are more often due to infection within the sinuses. If treated on that basis, these cases will gradually be cured through the aid of intra-nasal tamponades as advised by my method.

Primary cases will be overcome more quickly, but with the next recurrence the same procedure should be instituted and so gradually the patient will be brought to a point of tolerance where he will not have iritis. I have proved this in cases in which the patients have had it for successive winters, and then, after successful treatment, have gone five or six years without having it.

Another point of great value which has probably distressed all of us is the erratic refractive cases. There are patients coming to us who have been to every other oculist in a wide district and every one of these oculists has presented the patient with a different kind of glasses. These people come to me sometimes with several pairs of glasses prescribed within a brief space of time. Now, it is impossible to think that every one of the doctors had been wrong, or that every one had been such a poor refractionist that his estimate of the needed correction differed from that of everyone else. I have found that in many cases there was infection in the sinuses or intra-nasal cavity, and that treatment along these lines will cure the patient. If the patient is wearing proper glasses when he presents himself, he will wear the same ones when you get through with him. I do not rely on the patient's diagnosis of the case, but if he complains that he has difficulty in focussing and is not suffering from presbyopia, I suspect this condition. At one time of the day he will present exophoria, and at another esophoria. This makes it necessary to examine these patients at different times in the day. These patients present an anomaly which can be cured by this method of treatment, because there is intimate relation between the ethmoid nerve and the long and short ciliary nerves. I was once advised by a prominent surgeon in the navy, Dr. Arnold, never to say that I could do anything for glaucoma other than the accepted authorities had accomplished. He said: "If you do, no one will believe you." But I say that you can accomplish much for the treatment of glaucoma by this method. The tension of the eye can be reduced by placing tampons in the nose, allowing them to drain fifteen to twenty minutes, and then further cleansing the nose by douches or sprays. I saw a patient just before I came away. He is not cured; but he would not be by an iridectomy. He had lost the sight of his left eye and suffered attacks of neuralgia. It was a case of simple progressive glaucoma with acute exacerbations. I told him that it is usual to perform an iridectomy in these cases. He said: "You sometimes cure cases without iridectomy, and cases go blind with iridectomy and also under your treatment?" "Yes," I replied; and he said: "I will try your treatment." Remember that this is merely an adjuvant to the eserine or pilocarpine. I put this patient under the tampon treatment. He had pulsation of the central veins and aural sensations. He could count the heartbeats. His eustachian tubes were stenosed. At the present time the pulsation of the central vein is overcome and the eye in good condition. His pupils react readily to light. He uses a miotic two or three times a week in place of several times a day. He recently had a cold, which set up the simplex glaucomatosis. In one treatment, however, the pain was relieved. The pupils were active again, the visual field regained its usual size, and he got back his normal acuity of vision with the lenses. That all came back in twenty-four hours. If you can do that in cases that refuse operation and fail to get along with the use of miotics alone, it is a treatment for glaucoma with which oculists should be acquainted and able to see. For that reason I wish to emphasize its virtue in such cases and advise its use in glaucoma.

Dr. Charles E. Terry, Jacksonville, Fla. (visitor)—I am not a member of this section, but I happen to be the patient that Dr. Manning spoke of in his paper, and I am especially interested in the treatment, as it has done so much in my case. Dr. Manning has mentioned the extent of the damage I suffered, and the results of treatment in this condition have been mentioned by Dr. Dowling, but what I wish to speak of is the chemistry of this bleaching of the tampons. While in Albany for several months, with nothing to do, I became interested in the question of why this bleaching occurred in some cases and not in others, and Dr. Pease, of the Hygienic Laboratory there, and I did some work on it, and by chance started to use a glucose broth culture of different organisms triturated into a solution of argyrol, forty grains to the ounce. We found that certain cultures precipitated the argyrol, leaving the supernatant fluid clear, and that others had no apparent effect on the argyrol solution. To make a long story short, we found that out of thirty or forty organisms only pathogens precipitated the argyrol, while non-pathogens had no effect on it when triturated into it in a glucose broth culture. The reason for this was obscure, but we reasoned it out in this way: The same precipitation will occur if you flow carbon dioxide through argyrol, but it goes back into solution as soon as the gas ceases to pass through it; so we concluded that it was a true oxidation. Looking up the chemistry of pus as different from normal mucin, we found

that the sugar in the pus gives the opportunity for oxidation.

Dr. Terry's Discussion of Dr. Mannings Paper—An ordinary broth culture will not have this effect, and neither will a levorotary sugar. I cannot explain why this preference should be shown for the dextro over a levorotary sugar. The only two exceptions to that reaction were the bacillus of lactic acid, which precipitated, and a culture of diphtheria bacillus, which had been used in the Hygienic Laboratory at Albany for the manufacture of anti-toxin. The same strain of this had been used for two years, and during that time it had changed its cultural characteristics, so that from an acid-growing organism it had become an alkaline-growing organism. On making pure cultures from a case of the disease, we found that the Klebs-Loeffler bacillus precipitated the argyrol, but the bacillus in that particular culture did not give the reaction, although normally it will give it.

Dr. Feingold—This question is so broad and interesting that it merits further discussion.

Dr. H. H. Martin, Savannah—I do not feel that I am competent to discuss this paper at all, but I cannot let it go unchallenged. Some of the statements contained in it are so entirely revolutionary, so completely different from anything that I have heard or seen or read of that, as Dr. Dowling has been good enough to say, I am a little skeptical.

Dr. Dowling must not feel that we are unfriendly to him because we are skeptical regarding statements that we cannot comprehend. The wonderful things that he has done with this treatment will, if the rest of us can do as well, place us under eternal obligations to him. His line of reasoning is clear, his statements are positive, and he must know what he is talking about; and I am going home with the idea in my head of trying to convince myself that it is practical. But my reason rebels. We have all been taught in recent years that a good many of our eye troubles are due to sinus infection, and we are all finding a great many more sinus infections than we suspected, but as to the efficacy of this treatment, I do not feel competent to discuss it. I, however, feel grateful to Dr. Dowling, as I think we all are, for giving us this new idea, which we must go home and digest, if we can.

Dr. U. S. Bird, Tampa, Fla.—Last year Dr. Terry called my attention to this matter, and while I have not had anything like the experience that Dr. Dowling has, I have had positive results as to the relief of the inflammatory condition. My series of cases, however, is not very large. There is one complication that occurs to me as being worth while to bear in mind, and that is that the cavity under the middle turbinate is not of the same size in every individual, so that I have had trouble in getting the tampon to fit.

Dr. Dowling—I do not put it under, but over, the middle turbinate.

Dr. Bird—I tried to get it out, and had to perform a very tedious operation in order to do so. The patient was a nervous woman, and I had a bad experience. I have borne that in mind since then, and have sounded the cavity before using the tampon. I have obtained curative results in my cases, which have been ethmoid cases.

Dr. S. S. Ledbetter, Birmingham, Ala.—If we exclude those who do not know much about it from the discussion, we shall have no discussion; but, regarding the question of curing these cases of choroidal retinitis, or retinal choroiditis, by that kind of method, I would say that I think that there is quite a difference between the thing's being a cure and being a **post hoc** affair. It may not be a **propter hoc**, you understand. I have not had a great many cases of choroiditis, but half the cases that I see come to me for partial blindness, and, on investigation, I find that they have had retinal trouble, but that the condition has subsided, leaving only the scars remaining. If I had seen the cases earlier and used the tampon, I might have claimed that the tampon had cured them, but the case was cured when I saw it. The fact that after using these tampons you get a cure of the disease, unless you can cure the blindness and relieve the spot, does not mean that the tampon did it at all.

I have never seen many cases of recurrent iritis (possibly two or three), and never saw them recur more than once or twice. Therefore, if I say a case is recurrent, and that because the patient has had two attacks and no more, I have cured him of iritis; it is a case of **post hoc, propter hoc!** I am a little skeptical regarding the cure, and should like to see a little more of it. I am not doubting the doctor, but the conclusion that he draws from the cases treated, I believe in the possibility of his being oversanguine and drawing conclusions hurriedly, but I may be mistaken about that.

Dr. Feingold—I hope that you will pardon the chairman for taking part in the discussion, but I believe that the question is so broad and so important that we ought not to leave without discussing it from all sides. First, I want to say that the South has been famous for its hospitality, and I hope that Dr. Dowling will not leave with the impression that we have invited him, under the pretense of hospitality, and now we are all falling upon him like the beast on the unsuspecting.

Dr. Dowling—One of the best evidences of friendship is the expression of your opinion.

Dr. Feingold—It is simply a question that we want to discuss among friends. We want to prove the thing the doctor has seen. I do not want to throw a shadow of doubt on what has been seen, but only on the interpretation of it. That is the thing I doubt. In order not to prolong the discussion, I will state that I can say "ditto" to everything that Dr. Ledbetter has said. There is, however, one thing that I should like to bring out for myself, and that is the question of the mechanism by which the cure is supposed to be accomplished. Frees, especially, has brought out this point before, and I thought that the doctor was going to allude to Frees' reflex point in the nose. By the application of almost harmless drugs there, we can relieve certain discomforts and pains; so we can understand how the refraction troubles can be relieved by the application of such a tampon. That I might understand, but what I should like to understand is how a sinus trouble, without hav-

ing produced an infection of the lymphatics or an infection of the veins, could, by being treated in this way, cure an eye trouble. That mechanism I cannot grasp. I could very easily grasp the cure of functional disorders of the eye by simple treatment of the accessory sinuses. I could also grasp the idea that a treatment of the accessory sinuses might relieve eye trouble, provided that it had given rise to infection of the lymphatics, and that to infection of the veins, but not so long as it has not given rise to any affection of the lymphatics or veins. In other words, I cannot grasp that by way of a reflex, an inflammation may occur. We can understand how a necrosis may occur, but not an inflammation. We know that a herpes occurs in the cornea by reflex processes, by toxins, but not inflammation. Now, how should that come to a sudden stop? I have never seen a case of choroiditis in the South in which we could attribute it to anything but lues. In spite of the prevalence of tuberculosis in the negro, we say that we have never seen a case of choroiditis that could be attributed to anything except lues. So, what I am after is the explanation of the mechanism of the thing. That is what I should like to hear Dr. Dowling explain—the mechanism of it.

Dr. Chayney—I feel somewhat as you do, Mr. Chairman, but I am not going to take part against Dr. Dowling. On the contrary, I am going to join with him, not that he needs any assistance from me, but because I can readily understand, from certain physiological and anatomical conditions, that his process of reasoning is entirely correct. Of course, I know nothing about his conclusions as he has drawn them from the practical use of his method, because I have never used it; but we all understand that the fundamental principle of good surgery is drainage. We all agree that if we had good drainage from the sinuses, we should have no sinus trouble; and the first principle that we try to establish in the treatment of sinus conditions is drainage.

As to the extension of sinus trouble from the sinuses to the ocular structures, that is a matter that we must gather largely from inference. Whether that occurs through the soft bony structures and the wall of the orbit itself, or through the lymphatics and the blood vessels themselves, we must take as a matter of inference; but we must agree that sinus troubles are often the cause of intraocular troubles. If we can relieve the sinus trouble by this method, we are getting at the root of the causes of the intraocular trouble. Therfore, if Dr. Dowling's method will relieve stasis in the nose and open up the channels of drainage from the sphenoid, ethmoid, etc., we can look for an improvement in the ocular conditions caused by a blocked drainage.

Dr. S. S. Ledbetter, Birmingham, Ala.—Dr. Chayney has said that we all agree that these conditions produce intraocular troubles; that is, choroidal troubles. I want to say that I do not.

Dr. Feingold—Neither do I .

Dr. Ledbetter—I do not believe it, and for this reason: I have seen a great many cases of blocked nasal passages, and do not remember one case of choroiditis in a patient with blocked nasal passages. I have seen cases of choroiditis, but they presented no symptoms of blocking of the nasal passages. If some cases of choroiditis are not accompanied with blocked nasal passages, and if some cases of blocked nasal passages are not accompanied with choroiditis, I should say that blocking could hardly be regarded as the cause, and therefore not curable by tampons.

Dr. Feingold—Gentlemen, I wish that you would all discuss this, so that we can give Dr. Dowling all the chance in the world to convince us. I should be delighted to be convinced. Is there any further discussion? If not, we will ask Dr. Dowling first, and then Dr. Manning to close.

Dr. Dowling—I always like to have people disagree with me, and so far as convincing anybody of the efficacy of this method of treatment is concerned, I would say that I do not believe that it can be done by mere talk. It might be done by cases treated and observed. In regard to the cases that I have noted, I may say that I do not think that anyone could have exercised more care and thoroughness in observation than I, as I have spent time in examining eye, nose, throat and ear before and after treatment, in order to determine what one single method of treatment will accomplish. I have tried the old shotgun prescription, and have found it lacking. This single thing of making a re-examination of the special organs after treatment is a distinct exception to the usual practice in such cases. It is marvelous, in examining the fundus before treatment and subsequently, to see the changes that have taken place. The method is so simple that I should not dare to tell you how useful it is, because you would say that I was over-enthusiastic. It is not necessary to have the nasal cavities blocked. There may be an absolutely free passage, and yet the sinuses, the ethmoid cells, etc., may be in fault and occasion the eye troubles. Inflammatory conditions of the uveal tract are positively influenced by such conditions in the sinuses.

It is easy to take a case and say that it is specific, because you have your various tests, which, if positive, prove it, and if negative, prove nothing. In this treatment we have to get down to cases observed and treated. I believe that there is such a thing as a saturation of the tissues with the products of infection, without producing an abnormal condition observable to the naked eye. Dr. Wendell Reber, of Philadelphia, has said that it is difficult to form an estimate of the relation between the nose and the eye, because you may refer a case to a rinhologist and he reports that there is nothing the matter, for the reason that he has not seen the patient in a condition in which there was a blocking of the nose. No man, from one examination, can say that a case is normal, because the patient may have a condition of intumescence today which clears up tomorrow, but which may have influenced the media of the eye while it continued.

Dr. Ledbetter says that he has never seen many recurrent cases of iritis. In reply, I can say that there are many such cases that are unrecognized, and I strongly recommend this treatment as a method to be employed not alone, but in conjunction with mydriatics.

In regard to the remarks of the doctor who spoke a few moments ago (Dr. Chayney) and in-

terpreted the reason for the success of this treatment by means of the physiological processes involved, I would say that I think that his reasoning is excellent. I should like the gentlemen present to go home and investigate the matter in a spirit of fairness, and apply the same technique that I have employed, and then accord your judgment. You should use the ordinary wire probe, either three-sided or quadrilateral, so as to place the tampon high up in the nares, and before withdrawing the probe, you should make a final effort to approximate the infundibulum, by gradually altering the angle of the probe to the nares from an obtuse to almost a right angle. This may be accomplished by introducing the cotton-tipped probe at approximately the same angle as employed when sounding the sphenoid sinuses. After the tampon is placed high up in the nasal attic, between the middle turbinated body and septum, the probe should be partially withdrawn, leaving the posterior two-thirds of the tampon in place; the handle of the probe is then bent down until it almost approximates a right angle to the nasal orifice and the anterior third of the tampon is forced toward the infundibulum by an upward push of the probe, which is then fully withdrawn. The tampon should be left **in situ** for from ten minutes to an hour. The **immediate** effects induced are suffusion or hyperaemia of the conjunctiva, sneezing and flow of mucus from the nose. The **ultimate** effects obtained are subsidence of congestions of the uveal tract, relief of actual inflammatory states of the iris, retina, choroid and optic nerve, and also as complementary effects clearing of the vitreous and increased visual acuity. Coincident with these improved states the semi-dilated and sluggish pupils that accompany many conditions of the retina, optic nerve and choroid resume a natural activity to light and efforts of accommodation that is surprising, and this may be considered a guide as to the value of the treatment, viz:

When the pupil has been semi-dilated and inactive to light and resumes its activity, you may be sure that your patient is being cured.

As to the time of repetition, if you do not get too violent a reaction, or if you get no reaction whatever, the treatment should be applied again on the following day. In Hare's Therapeutics, the statement is incorrectly made that it should be done two or three times a day. The reactions obtained are often too severe to permit any such frequency. As improvement is obtained, the treatments should be lessened in frequency to once a month.

The characteristic of many of these cases is great chronicity. They are the cases in which you have been unable to give your patients any hope. If this treatment is conscientiously conducted, it will afford some relief to many, and will cure a few of these outherwise intractable and incurable cases.

Dr. Martin—Have you any publications on the subject?

Dr. Dowling—Yes; I have published several articles on the subject. If the doctors will give me their names, I should be glad to send these articles to them. I have reported results only in the last couple of years, but Solis Cohen, of Philadelphia, wrote me that it would be a method to obviate the necessity of over-operating in the nose. It does so. I have made no mention of the benefits of this treatment as applied to the nose, but only as applied to the eye.

Dr. Feingold—Dr. Dowling has brought out a point that I had not heard before. That is, he said that very often, after the application of the tampon, you find a blocking up of the nose, accompanied with intense sneezing, which may last for hours. This is a point that I should have discussed when I first got up to take part in the discussion. I believe that this is an important thing, for the reason that observations recently published, especially by ————, do not mention it.

Dr. Kleijn has been reporting for three years consecutive series of cases in which van der Haave's symptom occurred. He says that this symptom, which consists of an increase in the size of the blind spot and the development of a central scotoma, occurs in all cases of blocking of the accessory sinuses. If Van der Haave's symptom will occur each and every time when the accessory sinuses are blocked, and will disappear when they are opened, I believe that therein lies a danger in the use of the tampon method, because, as Dr. Feingold correctly stated, it will produce a blocking of the sinuses for a number of hours after the insertion of the tampon. I should like to hear whether Dr. Dowling has taken that into consideration.

Dr. Dowling—With regard to the scotoma, I wish to say that I have come to look upon this particular condition as diagnostic of sinus disease, and also that I now recognize what I term a macular retinitis, in which there may be a slight central scotoma. In these cases you may observe a condition that is easily overlooked and regarded as a normal fundus. In the region of the macula is a silver dot, surrounded by a very much congested area, and this is accompanied with slight subnormal visual acuity.

This particular macular condition, together with woolly disks, dilated and full veins associated with venous pulsation on light pressure upon the eyeball should always lead to investigation of the ethmoid cells and sphenoids, as they are frequently diseased and complicate such fundus findings. At one time, while a guest of Drs. Wurdemann and MacWhinne in Seattle, I was led to suggest a possible sinus involvement because of the fundus appearance, and this Dr. MacWhinne corroborated by finding pus in the sphenoids, and further proved by the comma-shaped scotoma as shown by him to be present in sphenoid disease.

Speaking of Dr. Terry's case, I would say that I have not reported his case, and never shall, because no one would believe it. He had a central scotoma, absolute in both eyes. If you had seen his field of vision, you would wonder how he could see anything.

Dr. Terry—I could not see the light of a match with either eye.

Dr. Dowling—I persisted in the treatment, and in ten days or two weeks brought back the vision of the left eye to 20-20 or 20-10, and he has held that for five years. In the other eye, the process seems to have ceased. He has followed that treat-

ment by autogenous vaccines, which is a method that I have employed in many cases.

The subject is so large that it cannot be covered in one session, and all that I can do is to offer the suggestion, which all who investigate in the true spirit will find of value. You may find a better explanation than I offer, and I hope that you may; but it is difficult to prove the anatomical relationship between the eye and the nose. There must be an intimate connection between them. I do not believe that all ocular conditions following trouble with the nose are merely due to contiguity of tissue. A central scotoma is positive proof that there is trouble in the nose. An intumescence of the nose that comes and goes in cases of ocular lesions suggests an intimate relationship between these two organs.

Dr. Feingold—I do not think we have the right to make this discussion a cross-examination of Dr. Dowling, but I should like to ask whether blocking of the accessory sinuses does give the Van der Haave symptom. If so, the method is dangerous, because it produces an increased blocking for several hours.

Dr. Dowling—Even if that were the case, I should not throw aside the treatment. When the use of antitoxin was started, many persons stopped using it because some died. In the case of the treatment with the tampons, the intumescence can readily be relieved by means of cocaine.

Dr. Feingold—Then you use both the argyrol and the cocaine?

Dr. Dowling—I do sometimes, but not primarily. I have never seen this intumescence followed by any permanent trouble. However, in one case it was so prolonged and severe, and the labyrinthian symptoms were so acute, that the patient would fall down in my office. She persisted in the treatment, however, and today she is a well woman. She was complaining of labyrinthian vertigo when she came to me, and my treatment increased it markedly at first. The same thing holds true in the eye. You sometimes find the intumescence of the nose brought on very severely, but if so it can be controlled by the use of cocaine.

If you were to meet it in the first case, you might be led to discard the treatment, but it is too valuable for any man to discard.

Dr. Manning (closing the discussion)—I read this paper simply in order to promote discussion on the subject. I think that in that regard I have been very successful, so I shall not say anything further.

Dr. Feingold—I think that the Chair would voice the sentiment of the members of the Section by expressing thanks to Dr. Dowling, of Albany, for the discussion that he has promoted, and also for the good humor with which he took the firing aimed at him. I can assure him that it was done only in the true spirit of the scientist, and not because any of us doubted his statements. We doubted the explanation, but not the facts.

GANGRENOUS TONSIL.*

By U. S. Bird, M.D.,
Tampa, Fla.

Last March I was called in consultation to see a case of gangrenous tonsil, which will later be taken up in detail. The circumstances attending it excited my interest, provoking an investigation, the results of which are given below. My first discovery was that so rare is the disease that it is not a text nor reference book subject. My researches in the books at my disposal being futile, I took the matter up with a research concern, whose report follows:

Gangrene of the Tonsil.

The most recent article on gangrene of the tonsil is that by Dr. Richardson, published in 1905. (See Bibliography). In that article he gives two cases of his own and reviews three others, all that he was able to find in the literature. It is evidently a very rare condition. Text-books make no mention at all of it.

All of these cases show a history of tonsillitis, peri-tonsillar abscess, or "sore throat." In some cases only one tonsil, in others the whole tonsillar region was affected. The lesions were typically gangrenous, of greenish color, with dark exudate, and emitting the characteristic gangrenous odor. In some cases there was a discharge of dark fluid from the nose and mouth. The constitutional symptoms were those of toxemia—pallor, increased temperature, restlessness (delirium in one case), and mental anxiety and depression. Four of the five cases terminated in death; one recovered from the first attack, but succumbed to a second attack in about three months (Howe's case).

In only one case (Richardson, case 2) is a bacteriological examination reported; this showed "a diplococcus resembling the D. lanceolatus more abundant than the other organism. Staphylococci fairly abundant. No bacilli having characteristics of the fusiform bacillus of Vincent present. No spirillae or tubercle bacilli present." Dr. Richardson says: "The bacteriological examination does not furnish us with much positive information as to the infecting organism. A diplococcus is not the usual type of organism producing gangrene, yet it is the one most abundantly found in this case. The investigations are of more value in a negative way."

The treatment indicated is a thorough curetting to remove the diseased tissue, followed by antiseptic applications; Howe used a hydrogen dioxide spray and nitric acid applications, and general hygienic dietectic and stimulating treatment to aid the system in combatting the infection. If the causative organism can be determined, and there is appropriate specific treatment (anti-serum, etc.), this should also be employed.

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*Read at the Sixth Annual Meeting of the Southern Medical Association at Jacksonville, Fla., November 12-14, 1912.

Consult.

Richardson, C. W.: Gangrene of the Tonsil. Amer. Journ. Med. Sci., 130:611 (1905).

Also.

Cragen, E. B.: Gangrenous Tonsillitis. New York Med. Journ., 48:233 (1888).

Howe, A. H.: Case of Gangrene of the Tonsil. Phil. Med. Journ., 5:643 (1900).

McVeigh, J. F.: Gangrenous Eschar of the Tonsils. Dublin Quart. Journ. Med. Sci., 44:78 (1867).

The above report confirms the result of my personal investigations, as to the rarity of the disease. I obtained Richardson's paper, and find that the report is in the main correct in its statements and deductions. One sentence, however, may be misunderstood. It says: "Four of the five cases terminated in death." Five patients are mentioned in Richardson's paper—two of his own and three in abstracts. One of his abstracts, however, relates two attacks in one person, one at length and one simply referred to, the last being fatal, making really six attacks mentioned; but the important fact to be noted is that every reported subject of gangrenous tonsil eventually succumbed to it, one individual, however, recovering from a previous attack.

In addition I secured Cragen's paper, abstracted by Richardson. It is in part as follows: "W. J., colored male, 45; admitted to Roosevelt Hospital August 13, 1887, with the following history: A month before began to be troubled with weakness of his knees, frontal headache, dyspnoea and cardiac palpitation, these symptoms continuing until the present time. For the previous ten days had had sore throat, but the feeling of weakness from the knees down had been his chief complaint. The patient was rebellious against the use of the tongue depressor, and little was seen in the pharynx.

"8-20. On morning rounds the patient said that he felt very much better. . . . I was suddenly recalled, and found blood gushing from his mouth and nose. I was told that at first he expectorated bloody pus. Attempts to stop the bleeding failed and he shortly died."

"Autopsy—A large ulcerated area was found in the pharynx, occupying the site of the right tonsil, and extending for some distance on the postpharyngeal wall; to this a large slough was attached by one extremity. The odor was very offensive. In the portion of this ulcerated surface formerly occupied by the right tonsil were visible the open mouths of two small vessels, the source of the hemorrhage."

Several interesting facts are apparent in the above abstract, which will not be considered at length. It is the only recorded fatality due to hemorrhage, a danger to be referred to later. It is also the only case unrecognized during life, a defect in management open to criticism. The fact that the patient remained in the ward a week with a "very offensive" sore throat, for which no cause was discovered, is to be regretted.

The difference in the deductions from the above record of five cases, and from my experience of four cases, and one reported to me by a colleague, is notable. My experience would seem to be unusual, not only in the number of cases under my observation, but as to severity, treatment and results. In the following recital of my cases my case notes will be followed as closely as may be, using only necessary explanatory details:

Case 1.

March 4, 1912, a.m., called in consultation to see B. M., F., 8. History, illness of weeks. Marked anemia; enlarged spleen; has had K. I. Yesterday the attending physician noticed a sloughing tonsil. Difficult to examine, but tonsil, left, seen to be gangrenous; adjacent surface uvula pale; other tissue nomal. Apparently an idiopathic, spontaneous gangrene, cause not clear. T. 100.5; odor. Not seen later. 4-5. Next day, died 10 a.m. T. normal; P. 160 ante-mortem. Salvarsan intra-muscularly p.m. 4th. Diagnosis myelogenous leukopenia."

The above case was unique in my experience, a poser to me. Never having seen nor heard of such a condition, I was much at a loss. However, there appeared to be no emergency; the child's condition, while bad, had been slowly developing, and was apparently not due to, but rather the cause of, the throat trouble. So I decided there could be no harm in taking time to get my bearings, with the above result. In the meantime, I agreed with the attending physician that salvarsan would do no harm; accordingly, it was given that afternoon. She died the next morning before I saw her, about twenty-four hours after my visit, before I had outlined any treatment. From the history and condition, the diseased tonsil would appear to be rather a detail in the morbid picture than an active factor in the fatal result.

Case 2.

April 21, 1912. I was called to see M. G., W., 64; bedridden some weeks; very anemic; much depressed. T. 102 degrees, P. 100. The victim of a complex morbidity, which will not be taken up. A history of pus expectoration and a very foul breath. There was a large slough, including the right tonsil and part of the soft palate. The next day, with dressing forceps I removed as much as possible of the slough. Brisk bleeding started,

persisting for an hour or more, discouraging further interference, and limiting further treatment to silver nitrate applications. Five days later a part of the slough separated, the remainder coming away the next day, leaving a clean surface, which gradually healed. A bacteriologic examination was negative. The throat condition continued good and apparently had no part in his death, which occurred three weeks after disappearance of the slough.

Case 3.

W. K., C., M., 29, May 3, 1912, complaining of sore throat and fever 2-3 days. Slough of upper part right tonsil; adjacent surfaces soft palate and uvula pale. Had eaten nothing for two days. T. 99 1-2 degrees, P. 100. Condition fair. Silver nitrate. P.M. T. 98 1-5 degrees. P. 76. Swab taken, negative report.

"5-4. Doing well. Slough nearly gone. Continue treatment. Last time seen."

This case was a surprise to me. It differed so radically from the two others that it can be only technically classed with them.

Case 4.

My next and last case is the most interesting and instructive one of the series.

"June 18, 1912. J. S., W., M., 24, consulted me for sore throat, beginning the day before in the left side, getting worse, keeping him awake at night. Voice thick; appearance suggesting an extra tonsillar abscess. T. 102 degrees, P. 100. Bad headache; nervous. Left side soft palate inflamed and swollen. A further examination showed upper pole of tonsil to be gangrenous; hidden in the angle of the pillars. As much as possible removed with curet, applying silver nitrate. The slough had a characteristic, but not strong odor, and showed the noma bacillus. Next day better generally. T. 98 1-2. P. 80. Throat painful. Cutting forceps removed remaining slough. Recovery without interruption."

The interesting details are the rapid, violent onset, the presence of the noma bacillus, and the satisfactory result of such a condition.

In addition to the above four cases of my own I am indebted to Dr. Jefferson, of Tampa, for the details in the following.

Case 5.

Five years ago he was consulted by Mr. O., age 45, for a condition which seems to have resembled my Case 3, but in a greater degree. Bacteriology not studied. A gangrenous left tonsil was treated expectantly for two weeks, when the slough separated, healing proceeding without incident. I have lately inspected his throat, seeing nothing special about it; part of the left tonsil is lacking. Otherwise, the throat is negative. However, the throat, previously subject to recurrent inflammation, has since been well.

The above five cases, as compared with the five previously reported suggest some interesting conclusions. Since everyone of the first five patients afflicted with gangrenous tonsil died, the death rate may be put at 100 per cent, notwithstanding one patient recovered from a previous attack. My report of five cases incidentally includes two deaths, but neither would seem to be due to gangrenous tonsil, which in these cases appeared to be an intercurrent condition, more or less due to the general depression, which had rendered them vulnerable to such attacks. The other three cases never approached a fatal result; a marked difference in the two series.

The vigorous instrumentation suggested in the quoted abstract is not generally applicable. In my first case it was not considered. In my second case physical depression and bleeding interrupted operative measures. My third case recovered under expectant treatment. In my fourth case only were operative measures indicated, and carried out as thoroughly as possible. My fifth, reported case, Jefferson's, recovered under expectant treatment. When a small area is involved and the general condition is good, instrumentation is indicated. On the other hand, in great depression and extensive involvement, two conditions which seem to be associated, active interference may result unfortunately. In the operated cases reported by Richardson active treatment was useless, and in Cragen's case, dying without inference, it would have hastened the fatal result.

It is unfortunate that more light is not thrown on the pathology. Only one of my cases is of interest on this point. The presence of the noma bacillus is interesting and suggestive, and may be of importance in future observations.

Unless my experience proves to be unique, it may be assumed that gangrenous tonsil and recoveries therefrom are more often observed than the literature suggests.

DISCUSSION.

Dr. Feingold—Gentlemen, you have heard the paper on this rather rare condition of gangrenous tonsil. Is there any discussion?

Dr. Clifton M. Miller, Richmond, Va.—This paper is certainly of great interest. I am really very sorry that these cases of Dr. Bird's carry with them no report of a urinary examination, as well as the cardio-vascular examination, because I think that in these particular cases such an ex-

amination might throw some light on the pathological condition. If such examinations were made, I should like to hear, in Dr. Bird's closing of the discussion, what he has to say about them.

Dr. M. M. Stapler, Macon, Ga.—I was very much interested in the paper, for the reason that two days ago I had a case that corresponded with that described by Dr. Bird. I had never seen a case like it before, and it puzzled me. I suspected gangrenous tonsil, and, knowing no specific treatment for it, I gave the patient applications of argyrol. I hope that I shall be able to do something more for him when I get back home.

Dr. J. W. Jervey, Greenville, S. C.—I have also been very much interested in Dr. Bird's remarks and feel, in view of what he says, that he must be right in considering that there are a good many more cases of gangrenous tonsil than have been reported in the literature. I have never seen the condition in the active stage, but I do recall that in two or three instances patients have told me—this is not of importance from the scientific point of view, but is interesting from the standpoint that there are present more such cases than have been reported—patients say that their family physicians have told them that there had been portions of the tonsils sloughed off. In none of these cases, however, did I see complete sloughing of the tonsil. I should like to know whether there is any occupational history in this series of cases. That might have some bearing upon the subject.

Dr. Bird—I will take up that point later.

Dr. Homer Dupuy, New Orleans, La.—I am impressed with the rarity of this affection. In twelve years 'experience I can recall seeing only two cases. As to the causation, I would say that in these two cases I made special efforts to gather information as to the microscopic findings. I thought of Vincent's angina. A report from the microscopist of the Charity Hospital showed a number of saprophytic organism, but no fusiform bacilli.

I do not want you to be impressed, as I was some years ago, with the idea that the spirillum is always associated with a gangrenous process about the throat. It is not so. In quite a number of cases the mere presence of a membrane which gives rise to not the slightest constitutional reaction, but shows a tendency to reform, despite all local treatment, is the one characteristic symptom that we found, although the microscope had most positively determined the presence of the fusiform bacillus. It is clear in my own mind that while text-books refer to Vincent's angina as being violent in character, the fusiform bacillus may be associated with a membraneous condition that resembles diphtheria, yet very slight local and constitutional reactions are present.

Dr. S. S. Ledbetter, Birmingham, Ala.—I do not know of any case of tonsillar infection that I should call gangrenous, but I have seen several cases in which there was very extensive necrosis, not only of the tonsil, but also of the mucous membrane of the palate, the gums and the tongue—so much so that some of them proved fatal. I do not yet think, however, that they were gangrenous. I will give you the history of one of these cases as a type of the others.

I was recently called to see, in consultation, a child seven or eight years old, with the posterior nares, the palate, the tonsils, the pillars, the cheek, the tongue, and the lips all in a necrotic condition, so that when the mucous surface was torn off, there would be considerable bleeding. For four or five days the child was in a critical condition. She recovered, however. We sent her to the hospital, because her parents could not take care of her. We had an examination made by an interne, who was considered to be an expert bacteriologist, and he declared the case to be one of diphtheria, and said there was no bacillus present. The hospital authorities ordered the patient removed from the hospital and sent home, and cultures were sent to the City Bacteriologist, who made a diagnosis of a bacillus, but not that of diphtheria. My opinion at that time was that it was a case of Vincent's angina, although I have never been able to get examinations made in my town that would demonstrate the presence of the fusiform bacillus. The whole surface of the tonsil sloughed away, but not the entire tonsil. To call the condition gangrenous would indicate an involvement of the whole body of the tonsil. The whole tonsil would die, and this would leave a line of demarcation between the living and the dead tissue, and later the dead tissue would be thrown off.

I believed this to be a Vincent's angina. I do not know, however, whether or not this case would be classed as one of gangrenous tonsil by Dr. Bird. The bacteriologist said that there was a bacillus present, but he was unable to classify it. The hospital doctor said that it was a case of diphtheria because he found a bacillus. I insisted that it was not diphtheria. The child eventually got well, but it was very, very ill.

Dr. C. B. Wylie, Chattanooga, Tenn.: I have heard this paper with a great deal of interest. Gangrenous tonsil is certainly a very rare condition to encounter. It recalls to my mind a case that I had three months ago, a young lady, sixteen or seventeen years of age, with a history of having had scarlet fever about three months before. Otherwise, the history was negative. I reported the results of my examination to the general practitioner, who had seen the case forty-eight hours before. On the superior portion of the tonsil on the left side there was then a small spot, intensely red and slightly purplish in appearance, and the patient's suffering was so intense that the physician had referred the case to me for examination. She did not come to me for forty-eight hours, and when she did, there was an area of half an inch involved. It certainly was a necrotic condition. The temperature was 103 degrees, and there was considerable prostration and a good deal of perspiration. The patient was perspiring very freely in spite of that high temperature. I immediately enucleated the tonsil and used a styptic swab on the cavity. Two days later the condition was such as to lead me to cauterize the wound. On account of the conditions I found there, and some little hemorrhage that still existed, I cauterized it with trichlor-acetic acid. The patient then improved, and was well within a week. I had never thought of the condition as being rare until afterward. Then I began to think that it was the first that I had seen. I had never thought of it before.

There is just one other thing that I want to ask Dr. Bird, and that is, has he determined in his own mind what the cause was? Has he thought of it as a thrombotic condition?

Dr. U. S. Bird, Tampa, Fla. (closing the discussion)—I will say to Dr. Miller that there was no urinary examination except in one case. I did not make the examination in the case in which one was made, and the blood and tissues were not examined.

There was nothing in the occupation to indicate any relationship to the cases whatever. In one case the patient was a schoolgirl, ten or twelve years old. One case was that of a man sixty-four years old, who was the owner of a theater. Another was that of a colored man who worked in a garage. Another patient was a bookkeeper. There was no connection with the occupation.

As to the classification of the disease, I classified it clinically only by the appearance. In every case with which I came in contact, the bacteriological examination was negative, with one exception. It was diagnosed as gangrenous, or sloughing, simply by the appearance.

The first was a most remarkable case. The tonsil appeared as big as the end of your finger and was simply a grayish lump. The surrounding tissue was slightly inflamed. My conclusion, as stated in the paper, and as I believed then, was that the tonsillar condition was the result of, and simply incidental to, the general condition; and death, I believe was not due to the tonsillar trouble.

The case in which I got a positive bacteriological result was the most interesting and important that I had. It was plainly a gangrenous condition, but not one that included the whole tonsil. The upper pole or lobe of the tonsil was gangrenous. In treating that, I used cutting forceps and curetted. That case showed the noma bacillus. The bacteriologist was surprised to find it, because he said that he had never found it in any other situation than the mouth or cheek. It was discovered in a case that apparently had no connection with the ordinary condition of noma, and afterward the patient immediately got well, with no trouble at all.

The conclusion that I reach is that there was a marked difference between my series of cases and the entire series in the literature, which amount to only five cases. I have a series of five cases, four of which I saw personally, and one case that I have the history of. In none was the death of the patient due to the local condition.

"NOTES ON UNEQUAL PRESBYOPIA."*

By Dr. A. W. Stirling,
Atlanta, Ga.

Dr. Stirling.—Mr. Chairman, I wrote this paper, but it is now reposing peacefully in my desk at Atlanta, so I shall be unable to read it. If, however, it accords with the views of the gentlemen present, I will state the gist of its contents.

The object of the paper was simply to draw attention to certain refractive conditions. In prescribing glasses for presbyopic patients it is the custom for most of us to add a certain amount to the distance-vision glass, according to the age of the patient or according to the distance at which the patient wishes to use the glasses. The complaints of certain patients, however, led me to believe that occasionally, in certain individuals who are very sensitive, this may not be entirely a correct method of procedure. In examining the patient for distance glasses, I make a point of examining each eye separately, but I think that few, if any, of us think of doing so for presbyopia. We simply add an equal amount to each eye. I had certain patients, however, who led me to believe that this may not be correct; and I found, upon actual change of a glass, making one eye different from the other, that the symptoms of pain and asthenopia were relieved. That is the gist of what I wanted to say: to invite your observation on this point in cases in which the patient complains, after having glasses on, of still having some trouble.

There was another point, not exactly included in the heading of my paper, to which I would refer now, as my communication is not lengthy. Everyone has observed that when, for any reason, we do not examine the eyes of young people with a mydriatic, the amount of a plus glass that can be taken by the patient is usually considerably higher when both eyes are used than when one is used alone. That is, there is a difference of about half a diopter, depending on the age of the patient and other conditions. I make a practice, in every case in which I do not use a mydriatic, of examining both eyes together after having examined each eye separately. It occurred to me that while that had been known for a long time with regard to spherical glasses, nothing had been said about its being true also possibly in astigmatism. I found that it applied to some extent, although not so commonly, in the matter of an astigmatic glass. Sometimes the patient will take a higher glass with both eyes than with only one eye separately, and sometimes it may be well, in cases giving trouble, to examine two eyes together in the same way as I suggested with regard to presbyopia.

DISCUSSION.

Dr. Feingold: Before we open the discussion I think that the section will agree that we will accept Dr. Stirling's paper for publication as soon as he gets back to Atlanta and sends it. We will now open the discussion on this interesting sub-

*Before the sixth annual meeting of the Southern Medical Association at Jacksonville, Fla., Nov. 12-14, 1912.

ject, which I believe has a great many possibilities.

Dr. C. A. Thigpen, Montgomery, Ala.—For years I have ceased to regard the age of the patient, in a measure, when prescribing presbyopic glasses. I ask the question, "Where do you hold your book in reading?" And then I test each eye separately, and I not infrequently find a difference, as much as a quarter or a half a diopter between the two eyes. So I have found, from experience, that it is a good rule to test each eye separately in prescribing presbyopic glasses.

Dr. M. M. Stapler, Macon, Ga.—I was glad to hear the paper. It had not occurred to me that presbyopia would differ in the two eyes. I shall hereafter examine both eyes and fit the glasses according to the amount of presbyopia in each.

Dr. U. S. Bird, Tampa, Fla.—What are the limits of the difference found between the two eyes? It has not been my practice to examine each eye separately for presbyopia, although I have seen a number of glasses that differed. I have never found very much difference in the degree of presbyopia, though there is a possibility that there may be.

Dr. B. F. Hodsdon, Miami, Fla.—I was glad to hear Dr. Stirling's paper. I usually test each eye separately for reading, and have found it well worth the extra time in cases of presbyopia. I did not know that it was generally done. I was taught not to do it, but am satisfied that it is very important to carry out this practice in presbyopia.

Dr. A. W. Stirling, Atlanta, Ga., closing.—In reply to Dr. Bird's question, I would state that the amount of difference is really quite small. I do not believe that in the vast majority of people it would make any difference, but there are some persons with exceedingly sensitive eyes, and in such cases it is best to be very careful indeed. One of the patients of whom I was talking is a man whom I had examined a number of times without a mydriatic. The least change, even a half degree in the axis of his glass, would trouble him. The amount of difference is quite small, sometimes even only as a quarter of a diopter.

Dr. Bird.—That is, half a diopter is the upper limit?

Dr. Stirling—Yes; something like that.

A RETROSPECT OF 510 OBSTETRICAL CASES.

By J. B. Cranmer, M.D.,
Wilmington, N. C.

The following sentiments from the writings of Oliver Wendell Holmes should still be in the nature of an inspiration:

"A woman about to become a mother, or with a new-born infant upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degradation, when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law brought down upon its victim by a machinery as sure as destiny is arrested in its fall, at a word which reveals her transient claim for mercy. The solemn prayer of the Liturgy singles out her sorrows from the multiplied trials of life to plead for her in the hour of peril. God forbid that any member of the profession to whom she entrusts her life, doubly precious at this eventful period, should hazard it negligently, unadvisedly, or selfishly."

In the last several decades the custom once so prevalent among certain classes of making no special preparation for the comfort and safety of a woman about to be confined, along with the practice of allowing her to depend upon the services of any old woman, or old "mammy," or even a so-called "experienced"—often inexperienced—nurse is fast dying out in theory and in practice. In spite, however, of the general trend of opinion in both laity and profession towards the betterment of conditions along all obstetrical lines, there is still much more to be desired, and I, in company with many of my brethren, hope shortly to see the day when every woman who goes into the lying-in chamber will be in charge of a trained and competent accoucher. There should be laws on the statute books of every state regulating the irregular practice of obstetrics, and these laws should be enforced. No woman, however poor she may be, nor how humble her circumstances, should be in the hands of an incompetent, unhygienic woman who calls herself a mid-wife, and who left to fight this, the crucial battle of her life, will only send for a doctor if she "gets into trouble." This help is often sought too late to save the life of mother or child.

Before I begin my summary of the obstetrical cases in my own practice I wish, in connection with the above remarks, to draw attention to the following abnormalities which I have found in cases to which I have been summoned at the last moment by some old woman who had lost her nerve and had sent for me to see "what was the trouble."

These anomalies which vexed the mid-wives were

Right and left posterior rotation.
Face, transverse, and breech presentations.
Eclampsia.
Placenta previa.
Attached placenta.
Post-partum hemorrhage.
Prolapse of the cord.
Puerperal sepsis.

Complete laceration.
Extra-uterine pregnancy at term.

I would not say, nor would any just physician say, that these things do not happen under the best care, but I do say, and with no fear of contradiction, that they should not be allowed to happen to any woman who is at the mercy of the services of an untrained person who is incapable, from her very lack of training, to cope with such emergencies.

The art of obstetrics is daily becoming more refined and the careful obstetrician is endeavoring to leave less work in his trail for the gynecologist and the surgeon, and we are also endeavoring to handle our cases in the humblest homes—even those in the slums themselves—with the same care and skill with which we surround our patients in a home with refinement in its every detail, remembering always that "'tis the one touch of nature that makes the whole world kin."

Since I began to practice medicine in July, 1905, I have had 510 maternity cases in my own clientele. This does not include miscarriages before the sixth month. It is interesting to me, in proof of the cosmopolitan citizenship of America, to note that in this series there have been mothers representing ten different nations. The youngest mother was a girl of thirteen years and eight months; the oldest was fifty-one years of age.

In addition to the tabulated list which comes later, I have previously reported two cases which I found most interesting—one of tubal pregnancy and one of hydatiform mole. In the case of acute hydramnios the patient was delivered of twins at six and a half months. I have never seen such quantities of amniotic fluid; for a simile I can only refer you to Tennyson's Brook. An interesting though pathetic termination to the life-story of this woman came when eighteen months later she was again delivered of twins—a midwife alone in attendance—and death resulted from eclampsia.

Summary of Maternal Results in 510 Cases.

	No.	%
Average hours of delivery—		
Between 6 p.m. and 6 a.m.	329	64.5
Between 6 a.m. and 6 p.m.	181	35.5
Normal deliveries	421	82.5
Artificial deliveries	89	17.45
Primiparas	198	39.00
Multiparas	312	61.17
Presentations—		
Head (left occipits anterior, 80 per cent; right occipits anterior, 15 per cent; posterior rotation, 5 per cent)	462	90.5
Breech	32	6.27
Transverse	12	2.3
Face	3	0.59
Brow	1	0.17
Lacerations, approximately	200	40.
Anomalies—		
Post-partum hemorrhage	7	1.3
Adherent placenta	5	1.
Puerperal sepsis	2	0.4
Placenta previa (central, 2; marginal, 3)	5	1.
Eclampsia	5	1.
Phlegmasia alba dolens	3	0.6
Acute hydramnios	1	0.2
Sex classification—		
Male	262	51.
Female	240	46.
Twins (6 pairs males, 2 pairs male and female	16	1.5
Convalescence—		
Satisfactory	509	99.8
Deaths (pulmonary embolism following premature detachment of placenta)	1	0.2

In looking over these cases there are a few instances in which I feel a pang of regret at the way in which the cases were handled. However, I am grateful to see that there has been good work accomplished, and I am encouraged to go onwards towards my ideal for obstetrics.

Among the infants the following anomalies were noted:

Hydrocephalus	1	0.2
Ptosis	1	0.2
Facial paralysis (from forceps pressure)	2	0.4
Naevus (involving whole upper extremity; left)	1	0.2
Spina-bifida	1	0.2
Hypospadios (male)	1	0.2

There have been eighteen deaths among the new-born, making a mortality of 3½ per cent.

Wilmington, N. C.

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Next Meeting, Lexington, Ky., November 18, 19, 20, 1913

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OUR ADVERTISING POLICY—AN EXPLANATION.

The SOUTHERN MEDICAL JOURNAL maintains a clean advertising policy, not accepting any contracts to advertise proprietary preparations that have not been examined and approved by the Council on Chemistry and Pharmacy of the American Medical Association.

Recently out attention was directed to the fact that for several months we carried an advertisement of a preparation of which the Council had withdrawn its approval. Though we had an annual contract, we immediately cancelled it and the advertisement will not appear again in the JOURNAL. At the time this advertisement was accepted it was published by the Council among the approved New and Non-Official Remedies. Later the preparation was dropped by the Council, but we failed to see the notice of the Council's reconsideration, hence continued to carry the eighth page advertisement until our attention was called to the Council's action.

Last month there appeared in our advertising pages the name of a preparation of which the Council had withdrawn its approval, but this information was not sent out by the Council until after the JOURNAL was published.

We make this explanation that our readers

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of Southern Medical Journal, published monthly at Nashville, Tennessee, required by the Act of August 24, 1912.

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Sworn to and subscribed before me this 7th day of July, 1913.

(Seal) DELLA J. PURIFOY, Notary Public.
(My commission expires May, 1914.)

may know that we are doing everything possible to maintain a high standard of advertising and we regret that anything "not approved" slipped into our advertising columns. We are earnestly trying to live up to our motto, "The Truth and the Truth Only on Every Page from Cover to Cover." If at any time any of our readers see in the JOURNAL anything to which there is objection we would appreciate being advised of it.

DR. J. A. WITHERSPOON, PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

The American Medical Association elects one of its members president and at the following meeting, after having had the honor of being president-elect for a year, he is installed into office. Dr. Witherspoon was elected at the Atlantic City meeting last year, but he did not actually assume the duties of president until the first session of the Minneapolis meeting.

Dr. Witherspoon's reputation as an orator had preceded him, and the immense auditorium in Minneapolis was filled to overflowing to hear the eloquence of an honored Southerner—and the multitude assembled was not disappointed in the president's address.

Dr. Witherspoon's first words, a beautiful tribute to the retiring president, our "grand old man in medicine," Dr. Abraham Jacobi, brought every person in the great audience to their feet, giving the sentiment round after round of applause.

Dr. Witherspoon, after a brief discussion of the great work that is being accomplished by the American Medical Association, made an eloquent plea for the establishment of a national department of health. He discussed briefly the epidemic diseases that threaten invasion of our country and gave convincing arguments of the needs for the nation to protect and conserve the health and lives of its citizens. He was interrupted many times by applause, and after the exercises closed was given an ovation by his friends.

As the presiding officer over the House of Delegates Dr. Witherspoon made a wonderful "hit." A resolution had been introduced at the Atlantic City meeting providing for the election of a "Speaker" for the House of Delegates for the reason that the presidents of the Association, though always men of great attainments, have not always been parliamentarians.

Dr. Witherspoon's rulings were so just, his thorough knowledge of parliamentary usages so evident, and his control of the House of Delegates so perfect, that the idea of having a speaker to preside over the judicial and legislative body of the American Medical Association was laughingly abandoned by those who favored the plan.

Dr. Witherspoon, because of his oratorical ability, is very much in demand all over the United States. There can be no question of his reflecting credit upon the Association and upon the South, besides doing great good in informing the public of the wonderful progress of medical science and of the beneficent work for the public that has been accomplished by the great Association of which he is the chief executive.

MERGER OF THE ATLANTA MEDICAL SCHOOLS.

The recent merger of the two medical schools in Atlanta is an event of considerable significance. It demonstrates the wisdom of the A. M. A. Council in establishing the different grades of medical colleges according to their standards and not by their numerical patronage. State boards of health and other medical authorities everywhere are so shaping their policies that no institution for the teaching of medicine can longer afford to tolerate standards lower than those demanded by the Council for class A. In most large cities where two or more medical schools are in operation each has been afraid to adopt the highest

standards for fear of causing students to select the other. In Atlanta there are two large schools of medicine controlled and taught by medical men who are recognized as the peers of any in the South. Hitherto their standards have been such that they were assigned by the Council to class B. It is a source of gratification to the entire medical profession of the South that these two schools have now united to form one great institution whose standards can at once be raised to meet class A requirements.

The result will probably be that the combined number of students will be considerably less than it has been in the past, but that its diplomas will represent a grade of scholarship that will be recognized even by such rigid state boards of medical examiners as that of Alabama. The JOURNAL prophesies that in the new competition between medical schools whose object is scientific thoroughness instead of large patronage the "New Atlanta Medical College" will achieve a position satisfactory to the profession and gratifying to state pride. Thus far Dr. W. S. Elkin as dean and Dr. W. F. Westmoreland as president of the faculty have been appointed to official positions.

A USEFUL BOOK.

Through the courtesy of Dr. W. A. Puckner, Director of the Chemical Laboratory of the American Medical Association, the JOURNAL has received a copy of "Volume 5—January to December, 1912," of the Laboratory Reports. Examination shows that it is full of information of a character often desired but seldom readily attainable. One of its articles alone is so useful that a glance at its contents causes one to consider it indispensable, namely, "The Naming of the Carbon Compounds; a Dictionary of the Prefixes, Suffixes and Other Syllables, as well as Letters and Signs Used in the Naming of Carbon Compounds." As the clue of a thread led Theseus through the Cretan Labyrinth, so does this article guide us through the bewildering maze of modern therapeutic nomenclature.

The book also gives analyses of some of the proprietary humbugs, such as the "wonderful" Sanatogen, which, though "sold at a high price under extravagant claims," seems to be nothing but the casein from skimmilk, generally known as cottage cheese. The stuff is edible and nourishing, but why pay a hundred prices for it when the dairyman or suburban housewife will supply it for a trifle? The book gives analysis of several fraudulent preparations, consumption cures, obesity cures, habit cures, and so on. It lets the light of truth shine through fogs of deceit to show the rottenness they hide. We all need it in order to protect ourselves and our patients from imposition.

The book will be supplied at cost, 25 cents, upon application to the Director of the Laboratory, Dr. W. A. Puckner, A. M. A. Building, Chicago.

IMPORTANCE OF VITAL STATISTICS.

It is always difficult to impress people with the importance of doing something from which no beneficial results are immediately visible when the duty assumed or the action performed has been ignored or neglected in the past. Such is the case with physicians when it comes to making regular reports of those items of their business which are included in the general terms, "vital statistics."

The routine work of a busy practitioner crowds out of his mind the necessity for not only recording but reporting to the state health authorities every birth, white or black, every case of infectious disease, and every death from whatsoever cause.

Some reason in this way: "They are born and they die anyhow, and the newspapers tell when we have smallpox, scarlet fever or cholera or anything like that, so what is the use of any red tape from me, especially as I get no pay for it?"

Two vital errors exist in such a reflection. First, his report *is* necessary as well as that of all his professional brethren in his territory to render the state records authentic. Today our population is in an unsettled frame of mind. A larger proportion of them than ever before are looking southward with longing eyes, dreaming of coming to us to establish homes for themselves and their children away from the dust storms and blizzards of

the north and northwest. Thoughtful men, whose citizenship we most desire, do not take such an important step without thorough preliminary investigation. They scan and analyze both state and national reports to learn as thoroughly as possible the condition of our general health, the number and causes of deaths, and the proportion of births of white and colored children. Where these are not available or are imperfect a bad impression is created at the start so that men of means and of most desirable character when finally ready to personally inspect the different places towards which their investigations have inclined them, pass by the localities wherein the doctors are neglectful of the duty of reporting vital statistics as either suspicious or undesirable. Northern people have an exaggerated conception of the unhealthfulness of the southern climate, especially as regards malaria and the hookworm. Moreover some have an idea that with us the negroes are always immensely in the majority.

These and many other fallacies would to a great extent be extinguished if all our Southern doctors would make prompt and complete reports to the proper officials as the law requires. It would tend to attract to their respective neighborhoods the most desirable class of immigration, thereby increasing the value of real estate of every description, and naturally expanding their practice. Thus it is readily seen that there *is* a need for every physician to furnish his quota of "red tape," and that it *does* promise remuneration for the slight effort required. This is only one angle from which to view the subject. There are others equally or more important to which the JOURNAL intends from time to time to invite the attention of its readers.

The Department of Vital Statistics of the U. S. Census Bureau, under the direction of Dr. Chas. Wilbur, is doing a great work in improving vital and mortuary statistics. The "model" census bill should be adopted in every state. It is now pending in several Southern States, and the physicians should use their influence to secure its passage. In a number of Southern States in a year or two after the model census law has been in operation, those states have had reported ninety per cent of births and deaths, and have therefore been placed in the Registration Area.

It is most important for the future development of the South to have complete and accurate vital and mortuary statistics.

EASY MARK DOCTORS.

It is well known to all fakirdom that next to the preacher the doctor is the "easiest mark." His business is, to a great extent, free from the constant clash of opposing interests that constitutes the life of the merchant or lawyer one endless battle, wherein his wits must constantly be on the lookout for treachery or deceit. His patients confide in him, and he considers almost all men worthy of belief. Consequently the pretentious claims of advertising drug manufacturers mislead him, he buys stock in Hawthorne mines, and his mail is always heavy with "get-rich-quick" propositions. One of his weakest spots, however, is his desire to be recognized as the peer of the most eminent in his own profession. He likes to see his name in the list of prominent physicians, not for the purpose of attracting patronage, for no prospective patient ever yet selected his physician from a medical directory, but because if it is right for the eminent Dr. So-and-So to have his name printed in bigger, blacker letters than most of the others, he has a right to do the same. True, it is a vanity, but it is an innocent vanity, and the only element of graft in the matter is the demand of the publishers of the directory for an exorbitant fee for this pretended distinction. Physicians know too well how for years a standard medical directory thus held up every doctor the publishers could bluff by showing the contrast on cunningly selected cuttings. Under their system advertising quacks and men utterly obscure were represented as leading medical lights. The A. M. A. Directory has emancipated us from

that old holdup, but there is a new one in the field.

A little red pamphlet, 3 inches by 5½, bearing the grandiloquent title of the "Imperial Information Bureau's Merchants' and Travelers' Guide," published quarterly at St. Paul, Minn., has successfully demanded tribute from some of the very foremost physicians in most of the cities and towns in the United States.

The character of these men is above suspicion. They would resent as an insult any sort of a proposal to *advertise* them, yet this is exactly what they have done, and what every one of us did when we paid for black-faced type in the old directory. In this instance the hook is baited only with the names of leading physicians.

"You see," says the solicitor, "here is Dr. A, of Chicago, and Dr. B, of Memphis," and so on through the list. Dr. Easy Mark wishes his name to appear in distinguished company in this condensed directory, so he subscribes.

It is safe to wager that not one patient a year ever consults this pamphlet to select a doctor. It is supposed to sell at ten cents, but inquiry fails to learn of one ever having been bought.

The editor-in-chief of this JOURNAL "bit," and his name appears in the pamphlet, though he has ordered its discontinuance. He suggests a similar course to other easy mark M. D.'s, and also that money is likewise saved by refusing to pay for special type in any directory whatsoever.

It is so very easy to stray from the straight and narrow road bounded by the rule of ethics that one may sometimes err unconsciously. It would not be amiss for every County Medical Society to condemn in no uncertain terms the forms of advertising above described, as has been done by the Jacksonville, Florida, society.

A BLOW AT "FEE-SPLITTING."

The resolutions quoted in this editorial are of a character that it would be well if every medical or surgical society in the country, great or small, would adopt word for word.

The resolutions are a model of concise, forceful expression. Beyond the shadow of a doubt the vast majority of physicians are entirely superior to such graft as they are aimed at, but the stain of its dishonor threatens to mar the standing of all, in the public esteem. Only by such vigorous action as that here shown can we convince the world of our sincerity. Only absolutely ethical conduct in social, business or professional life is allowable to anyone who assumes the high calling of a Doctor of Medicine.

The following is the announcement that was submitted to THE JOURNAL:

The following resolutions were passed by the Western Surgical Association December 21, 1912:

Resolved, That it is the intention of this association not to countenance the practice of fee-splitting in its members, nor in its applicants for membership, and that we incorporate in the application blank for membership in this association a clause to be signed by the applicant stating that he does not now practice and will abstain in the future from the practice of fee-splitting in any form and that he will not countenance it in others.

It is further suggested that this association would be pleased to receive the resignation of any member, if such there be, who feels that he is not willing to live up to this provision.

Resolved, That the Western Surgical Association asks the co-operation of the various American surgical associations, the State and interstate medical associations and the regents of the State universities in the suppression of both the secret and open fee-splitting evil in its various forms.

WHEREIN IS CONTRACT PRACTICE UNETHICAL?

The question whether a physician may contract to do the medical and surgical work for a mutual benefit society or for a corporation at a certain fixed price per head, sick or well, has been permanently adjudicated in the affirmative by the highest medical tribunals in this country and abroad. The American Medi-

cal Association and several state medical associations have decided that contract practice, for mutual benefit societies or for firms or corporations employing many persons, is not unethical. In England the Government itself assumes the part of the employer and contracts with the surgeons and physicians at fixed rates under an act called the National Insurance Act.

The fact that the Government is a party to the contract protects the officiating physician against the petty meanness or brutal graft sometimes practiced in this country by greedy corporations or their agents, who are accused of holding back, as commissions, the lion's share of the contributions assessed on the workers.

In one State, when a law was enacted forbidding the retention of such "commissions," certain corporations at once employed their "company doctor" upon a salary, regardless of assessments.

The Chattanooga, Tenn., Times of May 10, 1913, calls attention to certain cases before the courts, wherein contract physicians are suing for money collected from the laborers for medical services, but withheld from them contrary to law and justice. The sums claimed are unusually large, running from $23,800 to $40,000.

The results of these suits will be noted with great interest by the medical profession and by persons who make such contracts with laborers and doctors.

Per contra, in London some physicians operating under "the act" have upwards of 3,000 persons on their lists, yielding an income of $5,000 in addition to their regular practice.

It is noted that the number of indoor patients in the hospitals has not been appreciably affected, but the outdoor patients are fewer by one-half. With us contract practice has come to stay, but it must be free of graft, honestly assumed and honestly administered if it is to be tolerated. No contract doctor can neglect to properly examine and treat a contract patient and remain ethical. The London doctor who did not examine a case of abdominal pain thrice presented, but thrice prescribed an opiate, when a day or two later the patient died of an appendiceal abscess, faced a trial and conviction for malpractice, and justly so. The American doctor who as a routine supplied solutions of magnesium sulphate variously colored because he had agreed to "furnish the medicine" deserved expulsion from our ranks.

The doctor who electioneers among the laborers for their influence when the company asks a local medical society to select for them a "company doctor" while other applicants for the position merely state their wishes, should fear that his professional associates who know him best may not consider him the most competent, and subject himself to the charge of unethical conduct.

Contract practice is not, in itself, unethical. So say our highest authorities. But unprofessional, unfair, underhanded procedures that secure undeserved advantages to the applicant for the position, or careless, unscientific, uninterested service after the place is secured are unethical and deserving of condemnation.

It is the man, not the business arrangement, that is unethical.

WOOD ALCOHOL.

The number of deaths and of cases of blindness occasioned every year by wood alcohol, properly called methyl alcohol, is worthy of most serious consideration, not only by the medical profession, but also by those who make our laws. The instances when unusually foolish people voluntarily drink the vile stuff for purposes of intoxication are getting more and more rare on account of the general distribution of knowledge of its poisonous qualities.

The pernicious practice of using it in the manufacture of flavors and essences, because it costs only a small fraction of the price of ethyl or grain alcohol, has been to a large extent suppressed by the pure food laws. But

the poisonous wood alcohol still has abundant opportunities to get in its deadly work in other ways. Chief among these is its use as a solvent for gum shellac in the manufacture of varnishes or what is called hard oil finish. This is spread upon surfaces, from which the alcohol evaporates, leaving the hard, transparent gum as a durable glaze or finish. It is easy to understand that when two or three quarts of this substance thus spread upon broad surfaces yield their alcohol to the atmosphere of the room, that the air becomes so saturated that the workmen who breathe it are compelled to absorb large quanities of the poison. When there is no competent ventilation, as is often the case, especially in large brewery vats, whose internal surfaces require frequent reglazing, the results are often promptly disastrous. The records show many cases of fatal poisoning and of total blindness in the unfortunate workmen who are compelled by necessity to face this deadly peril. Less conspicuous, but still enormously mischievous, is the more common practice of using varnishes upon a smaller scale upon jobs of lesser size than those of the breweries. Experience shows that the repeated inhalation, day after day, of the fumes of methyl alcohol by the painter results in serious and frequently disastrous derangements of health and eyesight. One reason why wood alcohol is so much more poisonous than ethyl alcohol is because it is so slowly eliminated and so difficult to separate from the lipoid elements of the nervous system. Thus it is cumulative in its effects, while ethyl alcohol is promptly eliminated or else burned in the system as a natural fuel.

One point in the consideration of this matter suggests a possibility of ultimately getting rid entirely of wood alcohol as an ingredient of paints or varnishes, and that is *the entire absence of any necessity* for its use in that manner. Denatured alcohol is almost as cheap and equally as efficient as wood alcohol, and a war of extermination should be instituted against the manufacture and use of the latter solvent. The weapons for this warfare are at hand. Congress could pass laws that would compel every gallon of wood alcohol manufactured in the United States to be placed so under its supervision and control that it could not be moved or sold except upon requisitions stating the precise purpose for which it was to be used, and if the statements were satisfactory a necessary permit could then be issued by the proper government authorities.

The widespread organization of labor could also be used as an irresistible obstacle to the further poisoning and blinding of workmen. If the painters and varnishers' unions all over the country would unite in refusing to allow their members to use paints or varnishes in which wood alcohol is a solvent, its manufacture would soon cease to be profitable, its price would advance on account of the difficulty in obtaining it and it would find its level in the few places in arts and sciences where it is really indispensable.

So here is another opportunity for the patriotic physician to serve his people by starting a propaganda in his medical society and among his patrons against the use of wood alcohol, under whatsoever name, whether as "Columbian Spirits," "Standard Wood Spirits," "Deodorized Methyl Alcohol," or any other disguise whatsoever. All that is needed is to properly educate the people. Experience shows that when once they are really convinced they will take efficient action.

SEX HYGIENE IN THE SCHOOLS.

Whenever a worthy idea is accepted by the American public it seems inevitable that the efforts to render it practical and useful will be carried to an extreme. Such is the case, in the opinion of THE JOURNAL, when enthusiasts advocate teaching "sex hygiene," and necessarily all that pertains thereto, in the schools. If there is one subject on earth which should be taught only under the sacred seal of parental confidence that subject is sex rela-

tions and everything connected therewith. The world is full of influences that militate against modesty and cultivate that look of brazen assurance which is becoming altogether too common upon the faces of the rising generation. When the day shall come when parents delegate to hired instructors the most sacred duty that parenthood can impose upon them, then, indeed, will have dawned the age when decency will be at a discount and Phrynes will be more highly esteemed than the Marthas to whom the duties of the home are paramount. The man who in every community possesses in the highest degree the confidence of his fellow citizens, to whom every door is open and the secrets of every heart confided is the family physician. In this restless age a great opportunity for good confronts him in this connection. Better than anyone else he knows the consequences of improper sexual instruction, on the one hand, and the blessed protection afforded on the other when the mother or the father, realizing their duty and their opportunity to rivet forever the bonds of mutual confidence and love that should unify the hearts and wishes, the beliefs and the likings of their children with their own, sensibly and gently lead the inquiring young souls through the mystic portals beyond which gleam the fruit-burdened trees of the knowledge of good and evil.

To the family physician alone is granted the high privilege of instructing those parents concerning opportunities and duties which too many of them have neglected through thoughtlessness rather than from indifference.

Doctor, you know, and you will not neglect to guard the future welfare of your own offspring. But supposing you did not know, had never thought of the subject, would you not thank some trusted friend to arouse your consciousness to its importance and thereby lead you to the performance of a sacred duty?

Your patrons are your friends. Govern yourself accordingly.

CORRESPONDENCE

TYPHOID INFECTION FROM DRINKING WELL WATER.

Panama City, Fla.

Editor Southern Medical Journal:

I wish to get your ideas as to the chances of infections from drinking water, especially typhoid, from pump wells which are from fourteen to twenty-four feet deep.

The soil is of a golden, very loose sand, with no clay subsoil or hard-pan to go through in sinking these wells.

The first twelve to eighteen inches of soil is fairly well compacted, but from that on the sand is of a very loose porous nature, so loose that it requires a special post-hole digger to take out the sand when digging holes.

Very truly,

——— J. C. JONES.

MEMORANDUM RELATIVE TO SUBJECT MATTER OF A LETTER FROM DR. J. C. JONES TO EDITOR SOUTHERN MEDICAL JOURNAL.

By L. L. Lumsden, Surgeon,
United States Public Health Service.

The infections of typhoid fever and the dysenteries have their primary source in human excreta. Not only persons ill with these diseases, but also certain persons in apparently good health ("carriers") may discharge in their excreta the infectious agents which, when swallowed by other persons, may cause those diseases. Therefore, any foods or beverages liable to become contaminated to even a very slight extent with human excreta are potentially dangerous. Water supplies frequently are polluted with human excreta from sewers, cesspools, privies, bed-pan contents or promiscuous deposits on the soil, and for that reason water supplies frequently are responsible for widespread distribution of infection.

Shallow dug wells are more liable to become dangerously contaminated than are shallow bored wells provided with pumps. The open well is exposed to pollution (1) from soiled hands of persons who handle the bucket and the chain or rope by means of which the bucket is raised and lowered; (2) from filth-laden dirt, dust, leaves, trash, worms and insects which fall into the well;

(3) from surface drainage or washings carrying filth directly from its original places of deposit or after it has been scattered around the premises on the feet of persons, fowls, dogs, cats and other animals. and (4) from seepage through the soil,

Bored or dug wells provided with water-tight casings extending above the ground surface, with water-tight covers and with good pumps are exposed to pollution only from seepage and consequently, if other conditions be equal, are much safer than open wells. If the water-tight casing extends through an impervious stratum, such as one of some varieties of clay, to a water-bearing stratum beneath, the water obtained will be as a rule safer than "ground water" obtained from the superficial pervious stratum of the soil. "Ground water" obtained from bored wells may be safe if sanitary conditions in the vicinity be such as to prevent dangerous pollution of the soil or if the soil stratum be of such (filtering) character as to render inocuous whatever polluting matter may enter the soil before it reaches the depth to which the wells are sunk.

As a rule the surface stratum of fine sand will possess high purification property, while a very pervious one of coarse sand or loose gravel may possess very little purification property.

In endeavoring to determine the safety of water from bored wells sunk into the superficial soil stratum consideration should be given (1) to the extent and proximity of sources of dangerous soil pollution—such as privy vaults and cesspools; (2) to the health of the people using the water, and (3) to the results of periodic bacteriological examinations of the water.

The extent of the area of dangerous pollution from a given privy or cesspool used at a uniform rate may be gradually increased in the course of months or years, as the purification processes of the soil become overworked. People who have kept well while using, for many years, water polluted with the contents of a privy or cesspool, may suddenly be stricken with a typhoid outbreak when the excreta of some infected person become deposited in that privy or cesspool.

One sample of water from a shallow well may show no evidence of pollution and a similar sample taken a few days or weeks later may show unmistakable evidence of pollution. In vicinities where insanitary privies or cesspools are in use water from bored wells sunk in a superficial stratum of "very loose" sand should not be regarded as reasonably safe, unless repeated bacteriological examinations consistently show the water to be free from evidence of pollution.

MORE ABOUT THE TREATMENT OF MALARIA.

Editor Southern Medical Journal:

I was very much interested in the inquiry of Dr. Harper and the reply of Dr. W. M. James in regard to the treatment of malaria to prevent relapses, published in the May number of the Journal.

Dr. James' answer covers the treatment of malaria very well in regard to the prevention of the formation of the resistant form of the parasite, but it is obvious that this treatment is effective in a fresh infection only and not in an exacerbation of a previously chronic malaria, for he says, 'And here I want to call your attention to the most important thought to be kept in mind in the treatment of malaria, that is, if the immune form has been generated a relapse will surely follow after any method of giving quinine."

As a matter of fact 90 per cent of the attacks of malaria that we come in contact with are exacerbations of a chronic condition, for a large majority of the adult population of the South that have lived here since childhood have become infected with malaria while young; the proper treatment not being known at that time the resistant form of parasite was developed, and they have never been free from the disease since first infected. Another potent cause for the formation of this chronic condition is the common habit of the Southern people of taking small doses of quinine on their own incentive, for this taking of small doses seems to distinctly aid in the formation of the resistant parasites.

So that the treatment outlined by Dr. James being suitable to only a small percentage of the cases with which we come in contact, we are compelled to look for a treatment that will influence the chronic state if we ever hope to get rid of the infection.

These resistant parasites are peculiar in that they are immune to quinine, while the young parasites that develop from them are again susceptible to its action. Then the keynote to the treatment of this condition is something that will cause the resistant form to sporulate and to continue to do so until all of them have changed into a form that can be influenced by the quinine.

There are several agents that will cause the parasites to multiply, such as, an unusual strain, either mental or physical; errors in diet, change from one locality to another, etc. All of us have noted these as a cause of an exacerbation of an existing chronic malaria, or in other words, the

sporulation of the resistant parasites. These agents, owing to their character, are not suitable as a therapeutic procedure, but we have in the Hot Springs baths an instrument that will certainly cause the parasites to sporulate, and one that can be readily controlled to suit the case.

We treat numbers of these cases here yearly, and it is a common occurrence, if quinine is not started promptly, for the patient to have an acute exacerbation of his malaria after he has taken a few baths, showing how markedly the baths stimulate the production and throwing out into the general circulation of these young parasites.

By giving the patient these baths, and, at the same time quinine in a suitable manner, we are able to kill these young parasites as they develop, and in that manner completely eradicate the disease. We have at present under treatment a case that will illustrate: A boy ten years old, has lived all his life in a malarial district, came to us with chronic malaria. He had a spleen enlarged so that it extended the width of a hand below the costal margin. He has been under treatment for about a month, and, at present, you can hardly feel the spleen.

Very truly yours,
W. L. SNIDER.

Hot Springs, Ark.

THERAPEUTICS

ANHIDROTICS.

Anhidrotics are drugs that diminish or check perspiration. Certain pathological conditions, such as pulmonary tuberculosis in its later stages, are accompanied with profuse sweating called colliquative, from appearing as though the tissues were absolutely melting into perspiration. Several substances possess the power to correct this exhausting condition. Under another heading a formula was given composed of exsiccated sulphate of iron, extract of belladonna and extract of nux vomica. In most instances such a preparation will serve every necessary purpose. Sulphate of zinc is many times substituted for the iron salt:

Zinci Sulph.	grs. XII
Ext. Belladon	gr. I
Ext. Nucis Vom.	grs. III

Make 12 pills and take one three times a day.

Acidum sulphuricum aromaticum, in doses of 20 drops (1.29 c.c.) well diluted, three times a day, is an old and reliable remedy.

Acidum camphoricum is a very efficient anhidriotic in doses of from 15 to 30 grains (1.0—2.0 gm.), given in capsules several hours before the time at which its effect is desired.

Agaric acid, sometimes called agaricin, is most efficient in doses of from 1-30 to 1-15 of a grain (0.002-0.009 gm.). It should not be given hypodermatically, as it is very irritating to tissues.

The alkaloids of belladonna, hyoscyamus and strammonium are powerfully anhidriotic, but these drugs have already been sufficiently considered in former articles.

PICROTOXINUM.

Picrotoxin is the active principle of cocculus indicus, commonly called "fish berries," being used for poisoning fish until they become helpless and cannot avoid capture. Picrotoxin has been tried as a remedy for various disorders, but in only one condition is its usefulness undisputed. For controlling colliquative perspirations it is very efficient, taken by the mouth three times a day in doses of 1-100 of a grain (0.0006 gm.). It is slower than atropine to take effect. The peculiar dry, sticky sensation caused in the pharynx by atropine is not experienced from picrotoxin. When once it has secured control of the sudoriferous glands the effect continues for from ten days to two weeks.

Picrotoxin is a complete physiological antagonist to chloral, and in cases of poisoning from one the other should be used. It may, in such emergencies, be given hypodermatically in doses of 1-100 of a grain (0.0006 gm.).

Poisoning by this drug causes a train of symptoms remarkably like those of epileptic convulsions. The spasms are clonic, like those of chorea, instead of tonic like those from strychnine.

Its toxic character is the cause of the rarity with which it is prescribed, the desired effects being ordinarily attainable through the use of less hazardous therapeutic agents.

Annoying local perspirations, such as sometimes keep the feet damp and malodorous, may generally be corrected by free use of the following dusting powder:

Talcum, pulv.	℥I
Aluminis, pulv.	3I
Acid. Salicyl.	grs. V

M.—Dust lightly the offending surface night and morning. For sweaty feet, dust interior of stockings and shoes every morning, and wash clean at night.

BOOK REVIEWS.

The Operating Room and the Patient.

By Russell S. Fowler, M.D., Chief Surgeon First Division German Hospital, Brooklyn, New York. Third edition rewritten and enlarged. Octavo volume of 611 pages, with 212 illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, $3.50 net.

This splendid volume, dealing with the author's practical observation of hospital arrangement and technique, and also the observation on preoperative and postoperative treatment of surgical cases, is too well and favorably known to the surgical profession to require any extensive review here.

He deals intimately with the practical hospital side of surgery, illustrating the book by figures and schematic drawings.

The last chapter consists of a convenient classification of the instruments and dressings necessary for various operations.

This book is of especial value to nurses, house officers and surgical asistants.

The Practitioner's Encyclopedia of Medicine and Surgery.

By J. Keogh Murphy, M.C. (Cantab), F. R. C. S., M.D., Surgeon Miller General Hospital for Southeast London, Senior Assistant Surgeon to Paddington Green Children's Hospital, London. Oxford University Press: London and New York.

This volume of over fourteen hundred pages is a compact practical encyclopedia of medicine and surgery in all its aspects; an encyclopedia of such size and scope that the practitioner can with a single volume at once find reliable information simply and clearly set forth upon all subjects with which he may be called to deal in daily work.

The cordial approval of Sir William Osler, to whom the volume is dedicated, is sufficient recommendation of the excellency of this work.

A Text-Book of General Bacteriology.

Third edition, thoroughly revised. By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Octavo of 632 pages, fully illustrated. Philadelphia and London: W. B. Saunders Co., 1912. Cloth, $3 net.

A very excellent text-book of bacteriology, well illustrated, concise, and thorough. It can be recommended to the student as a text-book and to the practitioner as a working manual. The subject is first broadly considered, next the various pathologic organisms are studied in detail, and then follow chapters on the bacteriology of milk, air, soil, water, etc. A good text-book on a most important subject.

A Reference Handbook of the Medical Sciences.

Embracing the entire range of Scientific and Practical Medicine and Allied Science. By various writers. Third edition, completely revised and rewritten. Edited by Thomas Lathrop Stedman, A.M., M.D. Complete in eight volumes. Volume one. Illustrated by numerous chromolithograps and six hundred and eleven fine half-tone and wood engravings; 936 pages. Imperial quarto. The set, muslin, $56; leather, $64; half-morocco, $72 (subscription). Wm. Wood & Co., publishers, New York.

Perhaps no series of books will add more to the professional library than the "Reference Handbook." It is really an encyclopedia, covering the entire field of medicine, surgery and allied subjects.

The new edition of Vol. 1, 936 pages, contains all titles from "Aachen" to "Bacteriuria," each subject, each title being fully discussed and illustrated. Considering the scope of this magnificent work, its excellence of illustration, of type work, etc., and its value as a reference work to all subjects pertaining to the profession, no library can be considered complete without it.

Only a careful examination of the work can give an idea of the scope and value of the volumes.

A System of Surgery.

Edited by C. C. Choyce, B.Sg., M.D., F. R. C. S., Dean of and Teacher of Operative Surgery in the London School of Clinical Medicine (postgraduate), etc. Pathological editor, J. Martin Beattie, M.A., M.M., C.M., Professor of Pathology and Bacteriology, and Dean of the Faculty of Medicine in the University of Sheffield, etc. Three volumes. Funk & Wagnalls Co., New York. 1912. $7.00 per volume, $21.00 per set.

Prefacing the work the author states: "The aim was to produce a work representative of the surgery, theoretical and practical, of Great Britain, and it is hoped that the list of authors which follows the title page shows that the endeavor has not been unsuccessful."

Volume 1 treats of Surgical Pathology and Gen-

eral Surgery; Vols. 2 and 3 of the surgical diseases of the various organs and regions.

The work represents one of the latest and best treatises on surgery by British authors. The volumes are well illustrated with colored and black and white plates. The subject-matter is full, accurate and well presented. The work can be highly recommended.

Foods.

Their Origin, Composition and Manufacture. By William Tibbles, LL.D., M.D. (Hin. Causa), L. R. C. P., etc.; 8 vo, pages, 950. Price, 18 shillings net. Bailliere, Tindall & Cox, London, 1912. American agents, Chicago Medical Book Co., Chicago, Ill.

A comprehensive and exact treatise on food composition, origin and manufacture. The increasing appreciation of the importance of dietetics and its relation to body nutrition and to various nutritional diseases and conditions makes such a work of great value. The work fully considers each kind of foodstuffs as to chemical composition, nutritive value, digestibility, etc. It is one of the most valuable works yet published on dietetics.

Pathfinders in Medicine.

By Victor Robinson, M.D. Medical Review of Reviews, New York.

This small volume printed upon splendid paper and profusely illustrated should fill a long felt want in the minds of all who are interested in the history of medical pioneers.

The author gives a brief biograph of the more prominent epoch-making scientists and deals with the lives and their intimate relations that lends great interest to the reading of his text.

He treats of Galen, Aretaeus, Paracelsus, Servetus, Vesalius, Pare, Scheele, Cavendish, Hunter, Jenner, Laennec, Simpson, Semmelweis, Scheilben and Schwann, and the life and works of Darwin.

International Clinics.

Vol. No. 4, Series No. 22. J. B. Lippincott Co., Philadelphia.

This quarterly issue of the International Clinic is fully up to the standard of the splendid work. We note especially the splendid paper by Williams and Berkley on the Paraphyroid Treatment of Paralysis Agitans, Abrams' splendid dissertation on the treatment of Exopthalmic Goiter.

Works on the surgery of the Thymus Gland, Anorectal Fistula, Nephrectomy, and several other articles keep this issue well up to the standard of this publication.

Disease of the Mouth.

For Physicians, Dentists, Medical and Dental Students. By Prof. Dr. F. Zinsser, Director of the Department of Dermatology at the City Hospital, Lindenburg; Dozent at the Academy for Practical Medicine, Cologne. Translated and edited by John Bethune Stein, M.D., Professor of Physiology at the New York College of Dentistry, etc. With 52 colored and 21 black and white illustrations. Rebman Co., New York. Price, $7.00.

The author states that the work "is intended to be an illustrated aid in study and diagnosis." This purpose has been well attained by most excellent colored and black and white illustrations depicting the various syphilitic and allied conditions of the mouth. The work is valuable as an atlas of plates, the general symptoms, treatment and pathology of the diseases described being omitted.

Golden Rules of Diagnosis and Treatment.

New second edition, revised. By H. A. Cables, M.D. C. V. Mosby Co., St. Louis, Mo. Price, $2.25.

Like the first, the second edition of this very practical little book is not intended to replace the more extensive text-books, but it contains the essentials of diagnosis and treatment expressed in the fewest possible words consistent with clearness. It has been entirely rewritten and chapters added on infectious diseases. It is just the book the practitioner should have at hand for reference during busy office hours.

Medical Men and the Law.

A modern treatise on the legal rights, duties and liabilities of physicians and surgeons. By Hugh Emmett Culbertson, of the Ohio and New York Bars; contributing editor to the Laning, Ohio, "Encyclopaedic Digest," etc. Lea & Febiger, Philadelphia and New York. 1913.

A most excellent work treating of medical jurisprudence largely from the legal standpoint. This subject is one generally neglected by the physician and surgeon often to his personal embarrassment and loss.

The important subjects of malpractice or negligence, criminal liability, physicians and surgeons as witnesses, wills, etc., are ably and clearly dis-

cussed. The work possesses true value and can be fully recommended.

The Labyrinth.

By Alfred Braun, M.D., and Isidore Friesner, M.D. The Rebman Co., New York.

This exhaustive treatise of the internal ear is the latest American work on this subject and is illustrated with fifty text figures and thirty-four half tone plates. The entire subject is systematically analyzed from the standpoint of anatomy, physiology and pathology. There are chapters on examination, symptoms and treatment.

This is a work for the specialist and by such will be welcomed as a valuable addition to the English literature on the subject.

Surgery of the Eye.

By Ervin Torok, M.D., and Gerald H. Grout, M.D. Lea & Febiger, Philadelphia and New York.

This volume of some hundred pages is written to serve as a hand book for both students and practitioners. It is profusely and well illustrated and appears to be a splendid dissertation on the field of modern eye surgery. Several chapters are given up to the general preparation of patients, anaesthesia, and post-operative complications.

The various eye instruments and methods of their manipulations are quite interesting and clearly portrayed.

This book is certainly a valuable volume for the library, student and practitioner.

Skin Grafting.

By Leonard Freeman, B.S., M.A., M.D. C. V. Mosby Co., St. Louis, Mo.

This small volume of some hundred pages clearly and concisely portrays the methods of Reverdin and Thiersch, also the Wolfe-Krause and other methods of skin grafting.

There is also an interesting chapter on Grafting from Animals, also on Special Indications for Grafting, and the interesting conclusions of the author comparing the various methods.

This book may be read with pleasure and profit by all having to do with this procedure.

Psychanalysis, Its Theories and Practical Application.

By A. A. Brill, Ph.B., M.D. Philadelphia and London: W. B. Saunders Co. 1912.

This interesting work appears at a period when the profession is being stimulated to the study of the psychic features of disease.

The author, a former student of Dr. Sigmund Freud, gives an interesting and ready readable exposition of Freud's conception of the Psycho Neuroses on Psychoses.

There is a very interesting chapter on Dreams and their interpretations, and throughout the book one notes a well executed endeavor to bring this hitherto abstruse subject within the comprehension of the general practitioner.

This volume will certainly be read with pleasure and profit by all who will interest themselves in its pages.

Golden Rules of Surgery.

By Augustus C. Bernays. Second edition revised and rewritten by William T. Coughlin, M.D. C. V. Mosby Co., St. Louis, Mo.

This second edition of Bernays' work is composed of two hundred and sixty-five pages of valuable reading material for nurse, student, general practitioner and surgeon.

His remarks on Anaesthesia and Shock, Diseases of Bone and Joints, Surgery of the Heart, Thorax and Abdomen are assuredly "Golden Rule."

One might carry this about in his pocket for reading at odd moments.

A Dictionary of Treatment

Including Medical and Surgical Therapeutics. By Sir William Whitla, M.A., M.D., LL.D., Professor of Materia Medica and Therapeutics in Queens University, Belfast, etc. Fifth edition, 28th thousand. Bailliere, Tindall & Cox, London. 1912. Crown 8vo. Pages 1,204. Price 16 shillings net. American agents, Chicago Medical Book Co., Chicago, Ill.

A very practical work on treatment of medical, surgical, opthalmic and cutaneous affections. A complete and comprehensive treatise, considering the diseases seriatim and discussing the remedial measures for each.

Safeguarding the Special Senses.

General advice regarding the use and preservation of the eyes, ears, nose and throat. By Henry O. Reik, M.D., formerly Associate in Ophthalmology and Otology in the Johns Hopkins University and Surgeon in the Baltimore Eye, Ear and Throat Hospital, Baltimore, Md. F. A. Davis Co., Philadelphia. 1912. Price, 75 cents net.

The aim of this excellent little work is to point out those early danger signals of approaching troubles of the eye, ear, nose and throat. These signals, if appreciated and heeded by the laity

and profession, would save countless diseases of these organs by removal of the exciting cause or by permitting of early treatment and relief.

The style is non-technical and the subject-matter so presented as to interest both the lay and professional reader.

Cardio-Vascular Diseases.

Recent Advances in Their Anatomy, Physiology, Pathology, Diagnosis and Treatment. By Thomas Satterwaite, A.B., M.D., LL.D., Sc.D. Consulting Physician Post-Graduate, Manhattan State, Orthopedic, Babies, Champlain Valley Hospitals and North Eastern Dispensary, etc. Lemcke & Buechner, Publishers, New York City.

A very praiseworthy work on cardiology. The anatomy and physiology of the heart; the various methods and instruments for detecting heart lesions; and the various affections of the heart and vessels are fully considered.

The volume, 166 pages, is well illustrated; the text is explicit, and the information subject-matter reliable and valuable.

Handbook of Diseases of the Rectum.

By Louis J. Hirschman, M.D., President of the American Proctologic Society, Lecturer on Rectal Surgery and Clinical Professor of Proctology, Detroit College of Medicine. Revised and Rewritten Second Edition, 338 pages. Royal Octavo, 172 illustrations, including four colored plates. Price, $4.00. C. V. Mosby Co., St. Louis, Mo.

A very excellent work on rectal and anal diseases, their diagnosis, and medical and surgical treatment. The subject is dealt with in a concise, practical manner, the illustrations are most helpful, and the directions as to treatment distinctly good. The scope and application of local anaesthesia in anorectal surgery are fully discussed. The work shows many additions and improvements over the first edition, and is praiseworthy in every respect.

Diseases of the Heart and Aorta.

By Arthur Douglas Hirschfelder, M.D., Associate in Medicine, Johns Hopkins University. Second Edition. 344 illustrations by the author. J. B. Lippincott Co., Philadelphia and London. Price, $6.00.

This work represents one of the most thorough treatises on diseases of the heart and aorta. The volume of 738 pages discusses in separate parts of general considerations and methods of diagnosis; diseased conditions due to diffuse pathological processes; diseased conditions due to localized lesions and functional diseases without anatomical lesion. The work is profusely and most excellently illustrated, the subject matter is fully dealt with, and a full bibliography is given. The volume deserves the highest praise, and is a classic on pathologic conditions of the heart.

Tuberculin in Diagnosis and Treatment.

By Francis Marion Pottenger, A.M., M.D., LL.D., Medical Director of the Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California, 243 pages, royal octavo, 35 illustrations, including one colored plate. Price, $3.00. C. V. Mosby Co., St. Louis, Mo.

A valuable book on a very important subject. The author fully discusses the value of and the application of the various tuberculin tests; the value of tuberculin as a therapeutic agent, etc. Dr. Pottenger's wide experience with tuberculosis fully qualifies him to discuss the subject, and the book will repay careful study.

International Clinics.

Vol. I, Twenty-third Series. J. B. Lippincott Co., Philadelphia and London, Publishers. Price, $2.00.

Volume I, Twenty-third Series of this standard quarterly, contains its usual excellent collection of articles. Of especial note may be cited "Treatment of Poliomyelitis," by George E. Malsbary: "The Treatment of Aneurysms," by Albert Abrams; "Report of Ten Cases Operated upon for Pott's Disease of the Spine by Albee's Method of Bone Grafting," by J. Torrance Rugh; "Transplantation of Tissues," by L. L. McArthur; and an excellent review of the "Progress of Medicine During Year 1912," by Henry W. Cattell and Lucius W. Johnson.

The "Clinics" are too well known to require a lengthy review. The present number is well up to the usual high standard of the work.

Men, Manners and Medicine.

By Medicus Peregrinus. Octavo, uncut edges, in heavy paper cover. Price, $1.00. W. M. Leonard, Publisher, Boston, Mass.

A collection of essays and sketches representing the observations of a doctor, from his professional point of view, on men, books, etc., especially in relation to medicine. A charming little work in a lighter vein which will delight and instruct the reader.

SOUTHERN MEDICAL NEWS

ALABAMA.

At the commencement exercises of the University of Alabama in Mobile on the 22nd of May fifteen young men out of a class of thirty-four failed to receive their diplomas of M.D. The reason assigned is the great advance in the requirements now demanded by all the medical colleges in class "A" in the United States. Only two of the successful students achieved a position on the honor roll.

At the commencement exercises of the Birmingham Medical College, held on the night of May 21, fifty-two young students received diplomas in medicine, pharmacy, pharmaceutical chemistry, and dentistry. Dr. J. S. McLester gave the charge to the graduating class in medicine. It was announced that the college is to be known as the University of Alabama Graduate School of Medicine, "to develop the finished product."

On the night of the 21st of May Dr. W. A. Evans spoke on the subject of "Public Health" to a Mobile audience in the Battle House Auditorium. Dr. Evans served for some time as Health Commissioner of Chicago, and is now editor of the health department of the Chicago Tribune, at a salary of $10,000 a year. He is a native of Alabama.

The commencement exercises of the School of Medicine of the University of Alabama were held in the Lyric Theater at Mobile at 11 o'clock a.m., May 22. Governor Emmett O'Neal presented the diplomas, as President George H. Denny of the University of Alabama was prevented by illness from attending. Governor O'Neal delivered the oration, and the Hon. Palmer Pillans presented the prizes.

The Alumni Association of the Medical Department of the University of Alabama met in Mobile on May 23. A series of clinics were held by distinguished alumni and a luncheon was served at the Medical School. Dr. J. S. Turberville, Century, Fla., the retiring President, in an able address made a stirring appeal to the members of the Association to greater efforts in the interest of their alma mater. Dr. Angelo Festorazzi, orator of the Association, delivered an address on "The Social Evil." The following officers were elected for the ensuing year: Dr. Angelo Festorazzi, Mobile, President; Dr. M. L. Tisdale, Mt. Vernon, First Vice President; Dr. J. P. McMurphy, Atmore, Alabama, Second Vice President; Dr. P. J. Howard, Mobile, Secretary, and Dr. Toulmin Gaines, Mobile, Orator.

Dr. Ross Spier, of Furman, Ala., was married to Miss Emma Parker at Birmingham, Ala., June 29.

ARKANSAS.

The Arkansas Medical Society convened in its first general session on May 21, at Hotel Marion, in Little Rock. More than 300 delegates from all parts of the State were present.

During the meeting of the State Medical Society at Little Rock several women physicians met at the Hotel Marion and organized the Woman's Medical Club of Arkansas. Dr. Olive Wilson of Paragould was elected president, and Dr. Elzora Allen and Dr. Irene Tatman were elected first and second vice-presidents. Dr. Ida J. Brooks of Little Rock was elected secretary-treasurer. The club will affiliate with the Arkansas Federation of Women's Clubs.

Dr. Olive Wilson has been appointed City Health Officer of Paragould. She was the first woman ever to hold such an office in Arkansas. On the 17th of May she was named by the State Board of Health as Health Officer for Greene County.

Henceforth certificates of death must be presented to a proper official in every community before burial permits will be issued. This ruling has been enforced in the larger cities of Arkansas previously, but will now be complied with in the smaller towns of the State.

At Hot Springs, on May 19, Major H. A. Hallock, a retired army officer and medical director of the hot water baths in that city, committed suicide by shooting. No cause can be ascribed except in the words of a brief note found in his office, which says: "I have been fighting melancholia for weeks and an impulse to kill myself and my family."

FLORIDA.

Governor Trammel has appointed an entirely new board of health for Florida. Among those who were honored by an appointment are: Dr. S. R. Mallory Kennedy of Pensacola, Dr. C. J. Memminger of Lakeland, and Frank Fernside of Palatka. They took the oath of office on May 30 for a term of four years.

There is some speculation as to what will be the course of the State Board of Health regarding Lake Cherokee, which is covered with a mass of water hyacinths, which are always an obstruction to navigation and a secure haven for breeding mosquitoes. One inspector sent by the board wrote to the State Health Officer that in his opin-

ion the adjacent city of Orlando should be ordered to remove the hyacinths.

At Clearwater Drs. C. H. Field and W. T. Lanier have entered into partnership. Their offices are on the second floor of the Turner building.

LOUISIANA.

At Lake Charles on May 20 the City Board of Health appointed Dr. L. C. Dees sanitary inspector, and he at once assumed the duties. The work of cleaning up the city was to commence at once.

W. W. Whittington, Jr., mayor of Alexandria, directed the citizens to devote the 22nd of May to cleaning up the city. He announced that those who were not disposed voluntarily to do their duty in this matter would be required by law to do it, but urged that it be done voluntarily. Detailed instructions, covering every nook and corner where filth could accumulate or flies or mosquitoes breed were published in the Alexandria papers.

Dr. G. C. Chandler, City Health Officer of Shreveport, recently addressed a large congregation of negroes at the conclusion of their evening religious services at the C. M. E. Temple, of which Rev. H. W. Madison is pastor. The subject was "Sanitation," and the large congregation listened with intent interest. Dr. Chandler urged the leaders of their race to organize for proper instruction in sanitation and proclaimed that in this measure lay their future hope, financial and physical.

At a recent meeting of the Charity Hospital Board in New Orleans, Dr. C. D. Wilkins, of Wilkesbarre, was elected superintendent at a salary of $6,000 per annum. He is to begin his service on October 1. His expenses in coming to New Orleans are to be refunded. Dr. Wilkins was recommended by Dr. Goldwater, the well-known expert on hospital management.

The State Board of Health has increased the salary of Chief Oil Inspector Max Blanchard to $150 per month.

The board authorized the State Health Officer, Dr. Dowling, to employ several women inspectors at one dollar per year. He explained that acting in conformity with the plan of the United States government, that of taking no labor without pay, this would be an ideal plan and would keep the board posted on conditions in the isolated parts of the State. These women would have no official power, other than that of inspection, and their inspections would be subject to review by special officers. Dr. Dowling is supposed to hope to secure the co-operation of the Louisiana Federation of Women's Clubs with these inspectors.

On Sunday, May 18, Dr. Dowling made a personal inspection of nine trade centers in the morning markets. He found matters in a very unsatisfactory condition, screen doors open, open garbage cans, fish being washed in filthy water, and an abundance of spider webs and trash. In the French Market cafe he discovered a common roller towel and in another restaurant a public drinking glass reposed serenely on top of the water cooler. The butchers' stands needed better cleaning, and in some places the glass cases containing cakes and pies were open to the flies; the toilets were in bad sanitary condition and in some instances opened directly into rooms where food was being prepared.

MARYLAND.

Johns Hopkins Medical School has received an appeal for a surgeon to accompany the Crocker Land expedition, which is to sail from New York on July 2, for an excursion into the arctic regions. The objective point is Smith's Sound, the land of the Eskimo. The expedition is for scientific work.

The doctors in Baltimore disapprove of the plan of the physicians of Dauphin County, Pa., who have determined to issue a "blue book" in which patients will be classified according to their habits concerning the payments of medical bills. They are to be rated as "prompts, reliables, kickers, occasionals, infrequents, stallers, and brokes." The Baltimore physicians consider such a classification both impractical and undesirable.

The recent outbreak of smallpox in Baltimore cost the health department $10,000, which necessitated an increase in their regular appropriations.

The Board of Health of Cumberland has abolished the office of City Physician, which was filled by Dr. William L. Burns.

Dr. Abbie Winegar-Simpson, a woman physician at Long Beach Sanitarium, recently delivered an address entitled "Health and Fashion." She said that the purpose of clothes was to cover our sins. When they are designed in such a way as to attract attention to themselves we are simply advertising our sins. She intimates that the modern styles of dress are largely responsible for the increase in immorality.

(Medical News continued on advertising page 22.)

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PLUTO WATER

Especially effective in gastro-intestinal disturbance. Specifically indicated in uric acid diathesis, gout, chronic rheumatism, constipation, obesity, nephritis.

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Sodium Chloride	2.503
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The water was excellent from a sanitary standpoint.

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Southern Medical Association

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The dosage of Digalen can be adjusted with certainty to the needs of each case. Average dose 8 to 16 minims.
All up-to-date druggists carry Digalen. Sample on request.

THE HOFFMANN-LAROCHE CHEMICAL WORKS
440 WASHINGTON STREET
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SOUTHERN MEDICAL NEWS

(Continued from page 560.)

TENNESSEE.

At the commencement exercises of the Lincoln Memorial University Medical Department, at Knoxville, Dr. George A. Hubbell, the president, delivered an earnest and instructive address. Dr. L. L. Sheddan read the Hippocratic oath to the graduates and Dr. J. P. Tillery delivered the faculty charge.

On the 21st of May the Medical Department of Vanderbilt University at Nashville held its commencement exercises in the main chapel of the University. Chancellor J. H. Kirkland presided and conferred the degrees. The faculty charge was delivered by Dr. S. S. Crockett. Seventy-one graduates received their diplomas. The oration was delivered by Rev. Dr. Ira Landrith.

The Robertson County Medical Society met on May 20, at Springfield.

Dr. A. B. Deloach of Memphis has been reappointed by Governor Hooper as a member of the State Board of Medical Examiners. The good record he made while filling an unexpired term secured for him this honor.

At the recent commencement of the Memphis Hospital Medical College ninety-one men received their diplomas.

Dr. Jackson W. Jones, a well-known physician of East Chattanooga, died at his residence from cerebral hemorrhage. He was found unconscious in his office on the morning of Wednesday, May 14. The deceased was fifty-eight years old and had practiced medicine for thirty years. He was a graduate of the Louisville Medical College.

MISSISSIPPI.

Hereafter physicians in Mississippi will pay only home rates on their telephones regardless of whether they maintain instruments in both their offices and residences. All telephones installed in residences for the convenience of trained nurses will pay residence rates. Wherever there are exchanges not more than five miles apart whose rates are the same there will be no extra charge to subscribers for service on either exchange. So says the railroad commission.

The Lauderdale County Tuberculosis Association is undertaking to eliminate tuberculosis from that county. It will aid the sick, teach them how to protect themselves and the uninfected, will supervise the purity of food, see that dairy herds are inspected, enforce regulations relating to dust or flies or spitting, see that physicians report cases of tuberculosis, and care for helpless and instruct ignorant patients. They intend to erect a tuberculosis hospital in Meridian.

The Lauderdale County Medical Association held a very interesting meeting at Meridian on Monday, the 8th of May. Cases were reported and discussed at length and a banquet closed the pleasant reunion. A similar meeting and banquet is anticipated for August.

KENTUCKY.

At Olive Hill on May 22nd the body of Dr. W. S. Jarvis was found in a field about two miles from town. There were no signs of violence and he is supposed to have died from exposure. He was thirty-six years of age and unmarried.

It is proposed that the old Hospital College of Medicine on Chestnut Street, Louisville, be converted into a Salvation Army Industrial Home. The work will cost about $25,000.

It is now unlawful in Louisville to place upon sale any eggs until they have first been "candled" and found to be "good four days previously." All cold storage eggs must be plainly labeled as such.

At the twenty-eighth annual meeting of the Kentucky State Homeopathic Medical Society, Dr. Theodore H. Hollinshead of Louisville was elected president. All the other old officers were re-elected.

SOUTH CAROLINA.

Columbia has secured the first annual convention of the Southern Sanitation Association, which eventuated from the Municipal Sanitation Congress recently held at Greenville under the auspices of the Board of Health and the Chamber of Commerce. The date of the convention had not been determined at this writing.

Dr. J. M. McCarley, an aged and retired physician of Ora, died at Laurens at the home of his daughter, Mrs. T. B. Cruse, from heart trouble. One son and several daughters survive him.

Greenville has devoted one entire week to sanitation and its discussion. Visitors from other cities participated.

(Medical News continued on advertising page 24.)

Sero-Diagnosis of Pregnancy

This Laboratory is now fully equipped and ready to perform the new Serum Test for Pregnancy as originated by Abderhalden. Fee for this test, ten dollars.

We are also equipped to perform all types of research, microscopic and analytical work for physicians. Wassermann tests. Complement-fixation test for gonorrhoea. Auto Vaccines prepared. Stock Vaccines furnished. All investigations made by laboratory and clinical experts. Fee tables and instructions for sending specimens on application.

We have established a separate department of instruction in all branches of Clinical Diagnosis. Write us for particulars.

Wassermann Test for Syphilis	$10 00	Complement-Fixation Test for Gonorrhoea	$10 00
Urinalysis, chemical and microscopical	1 50	Sputum and Smears	1 00
Widal Test 10r Typhoid	1 00	Blood Count and hemoglobin	3 00
Tissues, pathological examination	5 00	Differential Count or Malaria	1 00
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C. Churchill Croy, M.D. ..... Director Bacteriological Department.

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Successors to Victor Koechl & Co.

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NEW YORK

SOUTHERN MEDICAL NEWS

(Continued from advertising page 22.)

NORTH CAROLINA.

Two cases of smallpox were discovered on May 19 at Charlotte. They were so slight in character that they were not at first recognized. The strict quarantine law is expected to prevent any spread of the disease. There is a fine of not less than ten or more than thirty dollars for any one breaking quarantine and a penalty of twenty-five dollars for removing the warning sign.

At Wilmington the city council reduced the appropriation for the County Board of Health by five hundred dollars. A much more serious reduction was anticipated but was not carried out.

TEXAS.

During the recent meeting of the Texas State Medical Association at San Antonio a memorial session was held in honor of members who had died during the preceding year. The roll was called and the silent response was eloquent of final absence. The eulogy was pronounced by Dr. James Terrell, of Galveston.

Governor Colquitt has appointed Dr. W. H. McCoach, of San Antonio, to the position of surgeon, with the rank of Lieutenant, in the Texas National Guard. Dr. McCoach has also been commisisoned as examining physician in the Civil Service Commission for the San Antonio post.

Dr. Marvin L. Graves, of Galveston, was elected President of the Texas State Medical Association for the ensuing year. He is professor of medicine in the Medical Department of the University of Texas.

VIRGINIA.

Dr. T. V. Goode has succeeded Dr. C. C. Hudson in the office of Medical Inspector of Richmond. The office is elective.

Dr. Manfred calls the attention of the Administrative Board to the unsatisfactory manner in which prescriptions are filled at the City Home. He is supported by the entire medical staff in the request that the City Hospital and the Almshouse be entirely distinct and separate in every respect.

The State Board of Health reports a rapid increase in the number of cases of hydrophobia in Virginia, as evidenced by the many applications for free treatment by the State laborafory. Patients are there practically all the time, notwithstanding the existence of regular Pasteur institutes for those able to pay. While people are swatting flies and fumigating mosquitoes, they should not forget that one sick dog is a more terrible peril than a nest of rattlesnakes.

WEST VIRGINIA.

Dr. Rulong and Dr. Kern were bound over to await the action of the grand jury at Wheeling for practicing medicine without a license. Dr. Kern is also accused of obtaining money under false pretenses. They conducted a doctor's office together. The amount of money Kern is charged with unlawfully obtaining is $140, and the case was continued. Rulong, however, obtained bail in $1,000 and was released pending a hearing. They were located on Market street. The above information was gleaned from the Wheeling Register of April 29.

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